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PROGRESS AFTER PERFORATED PEPTIC ULCER*

BY

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It is a common experience that acute perforation of a peptic ulcer may lead to a remission of symptoms, but there is little evidence as to the expectation of such improvement or the risk of relapse, and still less about the factors influencing the prognosis. Accordingly it seemed useful, as part of a broad survey of perforated ulcer, to carry out a careful follow-up study of a large series of cases.

Particulars of Survey

Method of Study.—The survey is based on all patients treated for acute perforation at the Western Infirmary of Glasgow during the period 1938–43. There were 880 such patients, of whom the 733 survivors (83%) form the material surveyed. An attempt has been made to trace all these survivors and recall them for examination. A large proportion of the patients were traced by letter and readily agreed to report. When this failed, the almoner visited the patient in his home and urged him to attend. For patients living at a distance the help of Red Cross workers and other voluntary organizations was elicited. Where the patient had left his former address and could not be traced by post, his present address was sought from the family doctor, from relatives, or from neighbours. By these various methods we were able to trace 666 of the 733 survivors, and, of these, 596 attended for follow-up examination.

Total number of patients treated for perforation		880
Survivors from original operation		733
Attended for follow-up examination	596	
Known to have died	43	666
Traced, but refused to attend	17	
Traced, but living abroad	10	
Completely untraced		67

The Population subjected to Survey.—Nearly all the patients followed up came from Glasgow and the adjacent districts; 95% were men, and the ulcer was situated in the duodenum in 87% of cases. The age distribution was as follows:

Age (at Perforation) of Survivors Interviewed

Age (Years):	15–	20–	25–	30–	35–	40–	45–	50–	55–	60–	65–	70–	75–79	All Ages
Cases	33	49	51	74	89	86	64	63	37	29	15	4	2	596

Operation and Post-operative Care.—In all but 10 cases the operative treatment was limited to closure of the perforation; in the remainder a simultaneous gastro-jejunostomy was performed. Most patients were discharged after a stay in hospital of 14 to 21 days. A few received further care in a convalescent institution, but the majority were discharged to their homes. They returned to work usually in 3 to 4 months. All patients on discharge from hospital were given instructions as to diet and medication. Inquiry during the follow-up examination made it clear that most of them attempted to follow the instructions for some months, but few persisted for more than a year. At the time of the examination the majority were taking advantage of the special milk and egg ration, but admitted that their only dietary restriction was to avoid the foods which, from experience, were known to cause indigestion; while as to medication, few did more than take an alkaline powder when symptoms were present. This state of affairs, lamentable though it is as a reflection of the impracticability of medical measures in a working-class population at the present time, has the advantage of providing for our survey a series of peptic ulcer cases whose post-operative course has been practically uninfluenced by treatment.

Method of Tabulation.—The investigation was carried out in 1944 and the early part of 1945. Consequently at the time of examination five years or more had elapsed in some cases since perforation, while in others the period was shorter. For the purpose of analysis we have tabulated the follow-up state for each period of 12 months post-operatively and treated the series as a whole. It follows that, while we have records of the whole series for the first year after perforation, the number of cases followed up for longer periods is smaller, and a full five-years follow-up is available only for those who perforated in 1938–9.

Assessment of Clinical State.—At the follow-up examination patients who had suffered a relapse were graded according to the severity and persistence of the symptoms. An attempt to base a grading on loss of working time was soon abandoned, since it was found that many patients remained at work even though suffering severe indigestion. For the purpose of this paper we have adopted a simple clinical grading into three groups: (1) those completely free from symptoms; (2) those who have suffered mild indigestion; and (3) those who have had attacks of severe indigestion, together with those who have suffered haemorrhage or re-perforation or undergone elective operation.

Record of Progress after Perforation

One method of presenting the progress after perforation is to record the number (or proportion) of patients who have remained continuously symptom-free and those who have suffered a mild or severe relapse. The findings in our series of cases analysed in this way are presented in Fig. 1 and Table I. It will be noted that at the end of the first year rather more than 60% of patients have remained free from symptoms, while about 20% have had a relapse with mild symptoms and the remaining 20% have had a severe relapse. The percentage who have sustained a relapse increases with the passage of time. By the end of the fifth year about 30% have remained continuously symptom-free, 20% have had a mild relapse, and as many as 50% have had a severe relapse.

Year-by-Year State of Health.—The method used above may be criticized as painting too gloomy a picture of the progress, for peptic ulcer is notoriously liable to remissions, and a patient who in one year sustains a relapse may subsequently enjoy a long spell of good health. This difficulty we have met by presenting a "year-by-year" statement in which is recorded

* This paper is based on observations made in the course of a survey of peptic ulcer carried out under the auspices of a Committee on Sickness Records set up in Glasgow by the Nuffield Provincial Hospitals Trust.

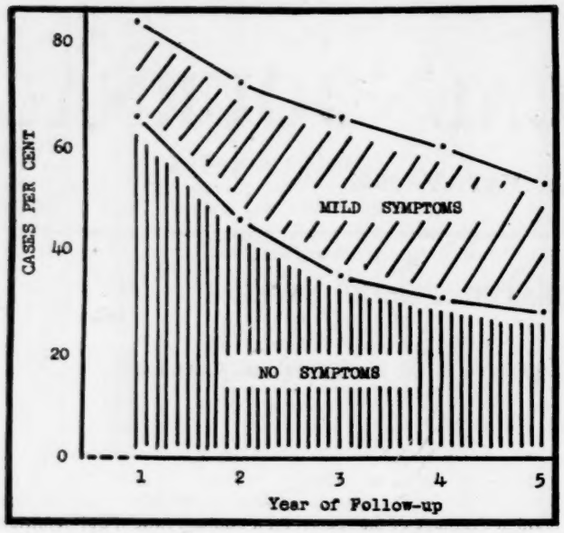

FIG. 1.—Progress after perforation. Showing (*a*) proportion of patients continuously symptom-free; (*b*) proportion of patients who have had mild indigestion. (See Table I.)

TABLE I.—*Progress after Perforation*

Year of Follow-up:	1st	2nd	3rd	4th	5th
No symptoms	392	254	160	107	47
Mild symptoms	110	147	140	97	41
Severe symptoms ..	94	151	157	136	78
Total cases ..	596	552	457	340	166

for each of the post-operative years the number (or proportion) of patients who *during that year* have remained symptom-free or have suffered mild or severe relapses. Our results are analysed in this way in Fig. 2 and Table II, and it will be seen by

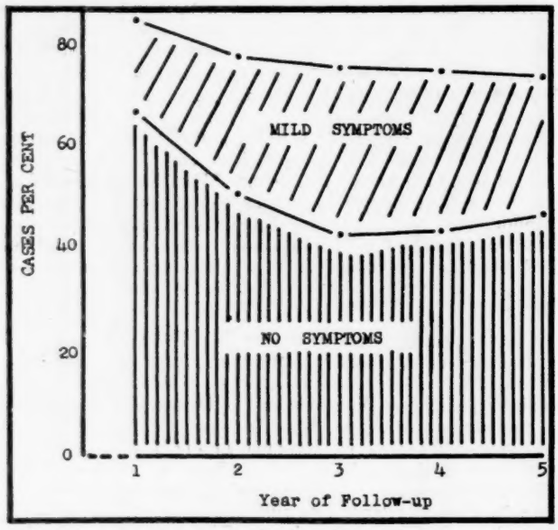

FIG. 2.—Year-by-year state after perforation. Showing (*a*) proportion of patients symptom-free in current year; (*b*) proportion of patients with mild indigestion in current year. (See Table II.)

TABLE II.—*Year-by-year State after Perforation*

Year of Follow-up:	1st	2nd	3rd	4th	5th
No symptoms	392	277	191	144	76
Mild symptoms	110	149	150	107	45
Severe symptoms ..	94	126	116	89	45
Total cases ..	596	552	457	340	166

comparison with Fig. 1 and Table I that the effect of allowing for prolonged remissions becomes obvious in the later years of the follow-up. Thus the proportion of patients who are symptom-free falls from about 60% for the first year to 50% for the second year, but thereafter remains above 40%, while the proportion of patients with no more than mild indigestion remains above 70%. The proportion with severe relapses varies between 20 and 30%.

This estimate of the yearly state of health of our ulcer population may be of value from the economic standpoint. We have shown that the proportion of patients having no more than slight indigestion tends to stabilize between 70 and 80%. It would seem reasonable to suppose that, of a group of workers who had survived perforation, approximately the same proportion should be healthy enough to remain in continuous employment during any one year.

Incidence of Major Complications.—In Table III we give the number of patients who suffered re-perforation or haemorrhage, together with those who subsequently underwent an elective operation for the relief of ulcer symptoms. It will be noted

TABLE III.—*Major Complications after Perforation*

Year of Follow-up:	1st	2nd	3rd	4th	5th
Cases observed ..	596	552	457	340	166
Re-perforation ..	10 (1·7%)	8 (1·4%)	11 (2·4%)	5 (1·5%)	4 (2·4%)
Haemorrhage ..	5 (0·8%)	7 (1·3%)	7 (1·5%)	4 (1·2%)	1 (0·6%)
Elective operation ..	16 (2·7%)	12 (2·2%)	8 (1·8%)	3 (0·9%)	3 (1·8%)

that in each of the post-perforation years roughly 2% of patients suffered re-perforation, roughly 1% sustained a haemorrhage, and roughly 2% found it necessary to undergo operation for the relief of symptoms. It will be observed also that the incidence of major complications showed little sign of diminishing with the passage of time: it was almost as high in the fifth post-operative year as in the first. Even allowing for the few who appear more than once, we estimate that within five years of perforation some 20% of patients may be expected to suffer a major complication.

Mortality after Perforation.—Of the 666 traced survivors from the original operation 43 are known to have died during the period of the follow-up survey. In 11 cases death resulted from a complication of peptic ulcer (re-perforation 7, haemorrhage 0, elective operation 4). In 23 cases death was attributable to causes other than peptic ulcer. In the remaining 9 cases the cause of death was not known.†

Factors Influencing Progress after Perforation

In our survey we have studied the possible influence of various factors on the progress after perforation. In this paper we present our results in relation to the sex and age of the patient, the duration of symptoms, and the social status. The influence of other factors will be discussed in subsequent papers. In presenting our results we have used as the index of progress the proportion of patients continuously symptom-free, but we have verified that what is said is also applicable to the year-by-year state of health.

Influence of Sex.—Of our 596 cases only 28 were women. They appeared to fare somewhat better than the men, but the number of women is too small to allow a reliable comparison to be made.

Influence of Age.—To assess the influence of age on progress we have divided our series of cases into three groups, of approximately equal size, according to age at the time of perforation—those aged 34 years or less, those aged 35 to 49 years, and those aged 50 or more. The progress of these groups is recorded in Fig. 3 and Table IV. It will be seen that the oldest group fared better than the younger groups. For example, in the oldest group the proportion symptom-free after

† The mortality among survivors from perforation has been investigated from the actuarial standpoint by Mr. W. Lundie, F.F.A., who has compared the actual deaths in our series with those which might be expected on the basis of a mortality rate calculated for Glasgow at the present time. While the number of deaths in our series is too small for reliable conclusions, it is probable that the mortality among our survivors from perforation is in excess of expectation. The excess might be wholly accounted for by the deaths due to further complications of ulcer.

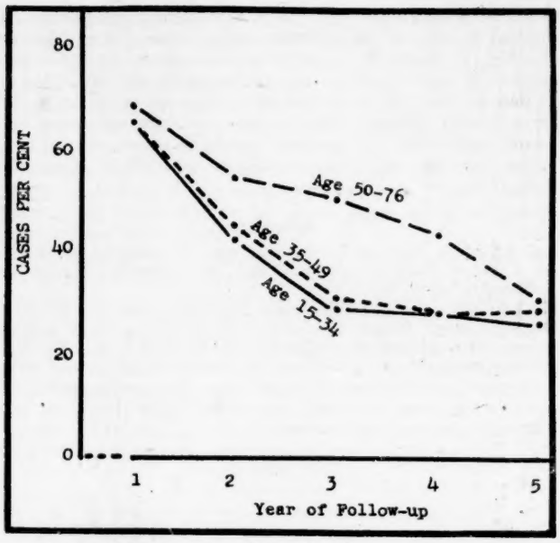

FIG. 3.—Influence of age (at perforation) on subsequent progress. Showing proportion of patients continuously symptom-free. (See Table IV.)

TABLE IV.—*Influence of Age (at Perforation) on Subsequent Progress*

	Year of Follow-up:	1st	2nd	3rd	4th	5th
Age 15–34 years	Symptom-free ..	135	81	48	37	19
	Total cases ..	207	193	165	130	73
Age 35–49 years	Symptom-free ..	155	99	55	35	17
	Total cases ..	239	222	178	126	58
Age 50–76 years	Symptom-free ..	102	74	57	35	11
	Total cases ..	150	137	114	84	35

For 3rd follow-up year $\chi^2 = 14{\cdot}82$, P less than 0·01. For other follow-up years P exceeds 0·05.

three years was 50%, as against 30% in the younger groups. Using as our index the proportion of patients continuously symptom-free, the outcome in the middle and young age groups was almost identical, as is seen in Fig. 3 and Table IV. Examination of our records shows, however, that had we used as our index the proportion *free from severe symptoms* (i.e., those symptom-free and those with mild indigestion taken together) the age groups would appear in orderly sequence, with the oldest group progressing most favourably and the youngest least favourably. We concluded that among patients who survived perforation the prognosis is best in the old and worst in the young.

Influence of Duration of Symptoms.—Fig. 4 and Table V show the progress of groups of patients classified according to the duration of symptoms prior to perforation. It will be noted that the outcome is more favourable in the groups with a short antecedent history of dyspepsia than in the groups with a long history. Not only are the differences material, but the groups follow each other in orderly sequence. Thus patients with no previous history of dyspepsia fared better than patients who had symptoms for 0 to 3 months, who in turn fared better than patients who had symptoms for 3 to 12 months, and so on.

Influence of Social Status.—We have also studied the effect of social status on the progress after perforation, and in view of the present interest in the social aspects of medicine we believe that our findings are worth recording. For this purpose we have used the scheme of social grading adopted by the Registrar-General for England and Wales. In this scheme Grade I includes members of the professions; Grade III includes skilled artisans; and Grade V includes unskilled workers; while Grades II and IV are intermediate. With our patients grouped according to this classification we have compared the post-operative progress, using as our index in turn the proportion continuously symptom-free, the proportion continuously free from severe symptoms, and the corresponding figures relating to the year-by-year state. In none of these comparisons have we been able to demonstrate a difference in the outcome of the various social grades, whose progress, with

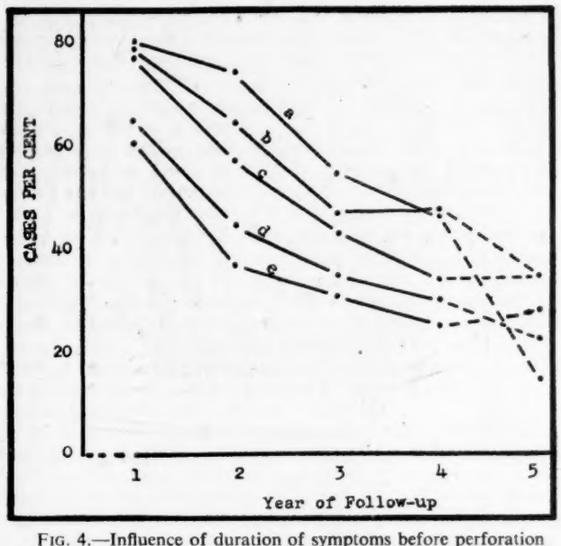

FIG. 4.—Influence of duration of symptoms before perforation on subsequent progress. Showing proportion of patients continuously symptom-free at follow-up. *a* = No symptoms before perforation. *b* = Symptoms for 0–3 months before perforation. *c* = Symptoms for 3–12 months before perforation. *d* = Symptoms for 1–5 years before perforation. *e* = Symptoms for more than 5 years before perforation. (See Table V.)

TABLE V.—*Influence of Duration of Symptoms Before Perforation on Subsequent Progress*

	Year of Follow-up:	1st	2nd	3rd	4th	5th
Duration of symptoms before perforation	None .. .. Symptom-free	43	39	20	16	2
	Total cases ..	54	53	37	35	13
	0–3 months .. Symptom-free	49	36	19	15	6
	Total cases ..	62	56	41	32	17
	3–12 months .. Symptom-free	43	31	16	11	6
	Total cases ..	56	54	38	32	17
	1–5 years .. Symptom-free	77	49	29	22	8
	Total cases ..	119	111	84	71	37
	More than 5 years Symptom-free	159	93	58	38	21
	Total cases ..	263	250	190	155	76

χ^2 test applied to each follow-up year = for 1st and for 2nd year, P less than 0·01; for 3rd and 4th years, P less than 0·05.

one exception, has been uniform. The exception was the class of semi-skilled workers (Grade IV), whose progress after perforation was notably favourable. For this anomaly there is an unexpected explanation—namely, that our Grade IV patients happened by chance to include an excessive number who gave a short history of dyspepsia before perforation, and who, as we have stated, must be expected to show a favourable outcome. There is therefore no evidence that the progress after perforation in this series was modified by the social status of the patient.

Discussion

Many follow-up studies of peptic ulceration have been published, but comparison of their results is difficult owing to the lack of a standard pattern of presentation. The series may include cases of different types treated by a variety of medical or surgical methods. The duration of the follow-up period may be inconstant, and one sometimes sees such statements as "in cases followed from two to ten years the proportion of cures was so-and-so." Lastly, the grading of cases according to the severity of symptoms, particularly under such categories as "I.S.Q." or "Improved," gives infinite opportunities for individual variation.

In this series we have the primary advantage of dealing with a group of patients who are uniform in two respects—namely, that all have peptic ulcers which have perforated, and that their post-operative course has been practically uninfluenced by treatment. In our clinical assessment we have adopted grading which is as free as possible from the errors of individual variation. We have recognized three grades—namely, "symptom-free," "mild indigestion," and "severe relapse." In our study of the factors influencing progress we have used as our index the simple criterion "continuously free from all digestive

symptoms." The use of this high standard of health has been necessary in the present series, because a considerable number of our patients suffered perforation (or re-perforation) after having had only slight occasional indigestion.

In the presentation of our results we have followed the method by which the series is treated as a whole, and the follow-up records are tabulated for each period of 12 months. In reporting the progress of a disease such as peptic ulcer, which is prone to remissions and recurrences, this seems to us to be the best method of giving an accurate picture.

Although, as we have said, the published studies of peptic ulceration follow no standard pattern, one finding is common to all—namely, the longer the follow-up period the greater the number of relapses—and the impression grows that what is being shown is not so much the result of treatment as the natural history of the disorder.

Some observers believe that the prognosis as regards future health is better in cases of perforation than in any other form of peptic ulcer. This opinion can be supported by considerations of pathology. It is the ulcer on the anterior wall of the duodenum which commonly perforates, and consequently these ulcers can penetrate only to a shallow depth before being treated surgically. On the other hand, ulcers on the posterior duodenal wall can penetrate deeply into the substance of the pancreas, creating conditions which make healing difficult, if not impossible. However, our findings provide little support for the view that the peptic ulcer which perforates runs a satisfactory course. It is possible that the non-perforating ulcer has an even worse record as regards health, but until we have completed the study of a group of non-perforating ulcers we are not prepared to say much about this, apart from observing that, since in the present series of patients the incidence rate of major complications within five years of perforation was 20%, the standard of health set by the perforating ulcer is not high.

It is noteworthy that in the great majority of cases acute perforation of an ulcer is followed by a remission of symptoms for, at any rate, a period of months. It is commonly averred that "perforation cures an ulcer"—by which it is implied that healing is due to the actual rupture, associated as it is with sloughing and removal of the fibrous bed of the crater. It seems more probable that the remission of symptoms is due to the rest in bed, the careful diet, the prolonged convalescence, and perhaps the alteration of mental outlook induced as a result of the operation.

The influence of the duration of ulceration before perforation (as judged by the history) on subsequent health is interesting. The longer the ulcer has been present before perforation the poorer the health in the post-operative years. In all probability this is accounted for by the structural changes accompanying chronic ulceration, but proof of this would depend on obtaining an adequate view of the ulcer at the time of operation, and for technical reasons this is not possible.

It is more difficult to suggest a reason why those who perforate in later life should have a better record of health after recovery from the operation than the younger men. The difference is not due to an excessive proportion of chronic ulcers in the younger age groups. It is possible that the difference may be related to factors connected with occupation, psychology, or dietary habits, or to a greater readiness on the part of older patients to submit to a more ordered regimen of life. The question certainly deserves further study.

It is a common belief that the treatment of peptic ulcer gives more satisfactory results in private than in hospital practice, and this is thought to be related to economic factors. The Registrar-General's classification of the population into five social grades corresponds roughly to income levels and provides a way of studying the influence of economic factors on disease. As has been shown, we have been unable to detect any difference in the morbidity between the various social grades in our series. This finding is surprising, and clearly merits further study. However, it should be noted that the period of follow-up coincides largely with the rationing of foodstuffs, and there can be no doubt that dietary differences between the various income groups have been greatly lessened during wartime. Furthermore, as we have noted, most patients were taking advantage of the extra allowance of milk and eggs granted in cases of peptic ulcer, and this should mean considerable uniformity in diet in the different social grades. The increased earnings of the lower social grades in wartime may also have played a part in improving their conditions—although the greater number of hours worked is to be set against this. We have already suggested that working overtime may have been partly responsible for the great increase in the number of cases of perforated peptic ulcer occurring in the West of Scotland in 1941 (Illingworth *et al.*, 1944).

Summary

A follow-up study of 733 patients who had survived perforation of a peptic ulcer is reported, and the following findings are discussed:

(1) Remission of ulcer symptoms after perforation was seldom of long duration. Within one year 40% of patients had relapsed (symptoms were mild in 20% and severe in 20%). After five years 70% had relapsed (symptoms were mild in 20% and severe in 50%).

(2) The incidence rate of major complications (re-perforation, haemorrhage, symptoms requiring elective operation) was 20% within five years of perforation.

(3) The mortality rate among survivors from perforation was somewhat higher than the standard mortality rate. The excess might be accounted for by deaths due to complications of ulcer.

(4) Progress among survivors was best in the old and worst in the young.

(5) Progress was best in patients with a short history of dyspepsia before perforation, and the longer the antecedent history the worse was the progress.

(6) Progress was not modified by the patients' social status.

We are indebted to our surgical colleagues at the Western Infirmary, who have given us full access to their case records and every facility for following up their patients. It is literally true that without their helpful co-operation this paper could not have been written. We have pleasure in acknowledging our debt to Mr. W. Lundie, C.A., F.F.A., who at the suggestion of Mr. J. G. Kyd, Registrar-General for Scotland, has submitted our mortality rate to an examination from the actuarial standpoint. Our thanks are due also to Miss Wood, our social worker, for her help in tracing many patients and securing their attendance for the follow-up; and to Miss Good for her tireless attention to the secretarial work involved in the collection of records.

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ONE HUNDRED CASES OF PERFORATED PEPTIC ULCER

WITH AN ANALYSIS OF IMMEDIATE AND REMOTE RESULTS OF SIMPLE CLOSURE

BY

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Perforated peptic ulcer is a subject with a vast and steadily growing literature. Formerly this was concerned mainly with problems of diagnosis, choice of operation, and immediate post-operative results.

Compared with most abdominal emergencies, the diagnosis of perforated gastric and duodenal ulcers now presents few difficulties. Their treatment likewise admits of no division of opinion so far as the need for closure of the perforation at the earliest possible moment is concerned. Fashions in abdominal surgery have, however, been reflected in the periodical shift of opinion as to what other operative procedures might with advantage be used as a supplement to simple closure of the perforation. Whilst one school of thought has persistently held that so grave an emergency called for the performance of the simplest life-saving operation, others have seen fit to employ gastro-enterostomy and, more recently, partial gastrectomy in the initial treatment of perforations. Less popular devices such as local excision of the ulcer and pyloroplasty have similarly had their advocates as and when each became current in the treatment of non-perforated ulcers.

It may be suspected that the advocacy of these various measures has not been wholly free from a tendency to rationalization. Thus, for instance, the enthusiasts for gastro-enterostomy convinced themselves that the suture of an ulcer

in the vicinity of the pylorus involved a high incidence of pyloric stenosis and obstruction, which justified the performance of a gastro-enterostomy for its prevention as part of the initial operation for a perforation. Similarly, the more recent adoption of partial gastrectomy as the operation of choice in the treatment of gastric and duodenal ulcers has been followed by a wave of popularity for the view that ulcers which have previously perforated frequently remain active or break down again, and that the immediate performance of a partial gastrectomy is justified as the surest means of protecting the patient from this hazard.

Considering the comparatively small amount of evidence that has hitherto been published concerning the later progress of patients who have survived the perforation of a peptic ulcer, it would seem that these views, no less than the widely held opinion that suture of a perforation commonly leads to the permanent cure of the ulcer, are largely based on vague impressions rather than upon factual knowledge derived from the prolonged and close observation of the results of simple closure. Patients discharged from hospital after suture of a perforation have not, on the whole, been followed up with the same care and persistence as have those who have received medical or surgical treatment for unperforated ulcers.

Latterly, publications on this subject have increasingly recorded the results of following up the cases over considerable periods. The present investigation is reported as a contribution to the more exact knowledge of long-term prognosis which is being gained as a result of such inquiries.

Material and Method of Investigation.—The material of this paper consists of 100 consecutive cases of perforated gastric and duodenal ulcers on which I operated at Redhill County Hospital, Edgware, during the five years 1938–43; 88 occurred in men and 12 in women. The patients who survived were re-examined at intervals of six weeks, three months, and six months after discharge from hospital, and thereafter every six months. Clinical examination was supplemented by *x*-ray investigation approximately once a year, whether there was a recurrence of symptoms or not, and more often when there were special indications.

Operative Procedure and Immediate Post-operative Results

Operation was undertaken at the earliest possible moment after admission to hospital. Glucose-saline was administered by rectal drip as a routine for the first 24 hours after operation. Fluids were then allowed by mouth and the diet was gradually increased.

Anaesthesia.—A general anaesthetic was administered in the majority of cases, using gas-oxygen and ether.

Incision.—The usual method employed was to open the abdomen through a right paramedian incision, either splitting the rectus muscle or displacing it laterally. Displacement of the rectus gave appreciably stronger scars than did splitting the muscle, and the latter has now practically been abandoned. There was no greater tendency to wound sepsis after displacement of the rectus muscle, and the time that can be saved by splitting it is quite negligible.

Intra-abdominal Procedure.—In all cases but one, simple closure of the perforation, with or without drainage of the peritoneal cavity, was carried out. A single chromic catgut stitch was passed through all layers to approximate the edges of the perforation. Occasionally, when the perforation was very large or the tissues were unusually friable, a second such stitch was introduced at right angles to the first. The ulcer was then invaginated by a row of three interrupted Lembert stitches passed in the long axis of the stomach and duodenum, the ends being left long to tie over and secure any available piece of omentum as a patch. A toilet of the peritoneal cavity was next carried out, excess of fluid being removed by means of moistened gauze mops. A sufficiently large abdominal incision was made to allow of a hand being freely introduced for this purpose, and the areas receiving routine attention were: (1) the space between the right lobe of the liver and the diaphragm, whence a considerable quantity of locked-up fluid can generally be released; (2) Morison's pouch between the under surface of the liver and the hepatic flexure of the colon; (3) the pelvis and the right paracolic gutter; (4) the space between the splenic flexure and the diaphragm, where fluid particularly collects in perforations of a gastric ulcer. I have repeatedly noted the localization of the bulk of the fluid to one or other of these compartments, and I believe that a systematic toilet of the abdomen in this manner is of considerable importance in minimizing the incidence of post-operative peritonitis and of subphrenic and pelvic abscesses. The use of a sucker introduced through a small abdominal incision is not an adequate substitute for gauze swabs carried by a hand to each of the areas mentioned above.

Drainage of the peritoneal cavity was carried out in 54 cases. In 47 of these the drain was introduced to the bottom of the pelvis, a suprapubic "stab" wound being employed in 41 cases; in the remaining 6 cases a right gridiron incision which had been made for exploration in suspected appendicitis was used. In 7 cases with long-standing perforation and a perigastric abscess a local drain to the site of the ulcer was brought through the paramedian incision. The remaining 46 cases were closed without any drainage.

Post-operative Complications

Some infection of the wound occurred in 14 cases, of which 10 had been drained suprapubically and 4 had been closed without drainage. Two of these patients died—one on the 20th post-operative day with an empyema, and the other from spreading gangrene of the skin 5 months after operation. Pulmonary complications occurred in 39 cases, but were mild and recovered quickly in all but 7 cases of severe bronchopneumonia, which accounted for 5 deaths. Two empyemas occurred, with one death. Two subphrenic abscesses formed, with one death. Seven patients complained of digestive symptoms while still in hospital and one had a haematemesis. In 41 cases post-operative recovery was completely uneventful.

Deaths

Seventeen deaths occurred in the series. These are analysed in Tables I and II.

TABLE I.—*Causes of Death*

Cause of Death:	Broncho-pneumonia	Toxaemia and Shock	Cardiac Failure	Wound Sepsis	Subphrenic Abscess	Empyema	Total
No. of cases	5	6	3	1	1	1	17

TABLE II.—*Cases and Deaths in Each Decade of Life*

Decade:	1st	2nd	3rd	4th	5th	6th	7th	8th
Total No. of cases ..	0	3	12	28	27	9	18	3
No. of deaths ..	0	0	0	1	6	1	6	3

Table II shows the relative total number of cases and of deaths in each decade of life. Under the age of 40 there were 43 cases, with one death; over the age of 40 there were 57 cases, with 16 deaths. There were 12 deaths among the men and 5 among the women. Thus whilst the cases occurring in women were 12% of the total, 29% of the deaths were among the women.

Anatomical Site of Perforation

The term "juxtapyloric" has been used to describe those of the ulcers which were in very close relation to the pylorus and about whose classification as either gastric or duodenal differences of interpretation might arise. In my opinion the majority of these were on the duodenal side of the pylorus. This view is supported by the post-operative *x*-ray appearances. Deformities due to scarring or to persistent ulcers, when present, were almost always found to be in the duodenum. Adopting this terminology, the distribution of the perforations was as follows: gastric, 12; juxtapyloric, 58; duodenal, 30. Five of the 17 deaths in the whole series occurred amongst the gastric ulcers. Five of the 12 gastric perforations occurred in women, with 3 deaths.

From these figures it appears that much the highest mortality was associated with the gastric perforations—42%, as compared with 15.5% for the juxtapyloric and 10% for the duodenal cases. Furthermore, the higher incidence of gastric perforations among women largely explains why there were proportionately so many more deaths in women than in men.

Attendance at Follow-up Clinic

Of the 83 patients who left hospital alive after operation, 13 were lost sight of immediately and 70 attended in the follow-up clinic for varying periods. Table III shows an analysis of these attendances.

TABLE III

Duration of Attendance:	1 Year or Less	Up to 2 Years	Up to 3 Years	Up to 4 Years	5 Years and Over	Total
No. of cases	25	16	6	13	10	70

That only 10 of the 70 patients should have continued to attend for as long as five years might be considered to be somewhat disappointing. It should be noted, however, that the period covered by this investigation coincided with the war years, when evacuation, call-up to the Forces, and transfers of industrial labour took an exceptionally heavy toll of attendances. This disadvantage is to some extent offset by the fact that the observation of these patients with peptic ulcer histories was carried out at a time when dietetic, living, and working conditions were particularly adverse for people suffering from digestive disorders.

Recurrence of Symptoms

During the time of their attendance in the follow-up clinic 38 patients had a recurrence of digestive symptoms. These were classified as "slight" (13 cases), with a complaint of occasional discomfort after eating, heartburn, or flatulence; "moderate" (11 cases), whose indigestion involved periods of absence from work but which responded to domiciliary treatment; and "severe" (14 cases), which required readmission to hospital for medical treatment or for the performance of a secondary operation.

The time which elapsed between operation and the first onset of a recurrence of digestive symptoms is shown in Table IV.

TABLE IV

Year after Operation:	1st	2nd	3rd	4th	5th
No. of recurrences ..	25	3	3	5	2

In Table V the number of recurrences of symptoms is related to the age groups in which they occurred.

TABLE V

Decade of Life:	2nd	3rd	4th	5th	6th	7th
Total No. of perforations ..	3	12	28	27	9	18
Total No. of recurrences of symptoms	1	6	10	9	3	3
No. of severe and moderate recurrences	1	1	7	6	2	3

Table VI shows the relation of the duration of ulcer symptoms before perforation to the rate of incidence of post-operative recurrence of indigestion.

TABLE VI

Length of Past History:	3 Years or Less	3 to 5 Years	5 to 10 Years	10 to 20 Years
No. of cases	47	12	19	10
No. of post-op. recurrences ..	8	3	6	4
Recurrence rate	17%	25%	32%	40%

The following inferences may be drawn from the evidence summarized in Tables IV, V, and VI.

1. A high rate of recurrence during the first year after perforation is followed by a sharp drop during the second year, a fairly constant low level of recurrence being then maintained during succeeding years (Table IV). The numerous recurrences during the first year are probably evidence that suture of the perforation failed to heal the original ulcer in those cases, whilst the recurrences of symptoms during the second and later years were almost certainly due to re-ulceration of a previously healed ulcer or to the formation of completely new ulcers. A striking example of this was a man who had a perforation of a duodenal ulcer and then remained completely free from digestive symptoms for four years. During the fifth year after perforation he developed symptoms of a gastric ulcer, with pain immediately after food. Skiagrams showed a large crater at the middle of the lesser curvature. A partial gastrectomy was performed, and the ulcer was found to be perforating into the pancreas.

2. The rate of recurrence of ulcer symptoms for each decade of life runs roughly parallel with the total incidence of perforations in the series for the corresponding age groups, each being maximal during the fourth and fifth decades.

3. The longer the patient has suffered from an ulcer before he perforates the more likely will he be to have a recurrence afterwards.

In general, it may be surmised that suturing the perforation in itself has little influence on the natural history of the ulcer, and that the immunity from further symptoms enjoyed by 32 of the patients among those observed in the present series was mainly due to the three weeks of complete rest and strict dietetic regime enforced during convalescence in hospital, combined with their ready observance of the instructions which they received on discharge, lest the price of carelessness should be a repetition of their recent ordeal. Those who have had a perforation have been warned, and they are not likely to forget. But the long-standing chronic ulcer is no more susceptible of cure by purely medical means after perforation than it was before, and it is in this group of cases that radical surgery after perforation finds its chief justification.

X-Ray Examination

At the follow-up clinic 130 *x*-ray examinations of the stomach and duodenum were made on the 70 patients who attended—54 during the first year after perforation, 32 during the second year, 18 during the third year, 16 during the fourth year, 9 during the fifth year, and 1 during the sixth year. The significant results of these examinations are given in Table VII.

TABLE VII

Year After Perf.	Normal	Irritability and Hypersecretion	Pyloric Spasm	Duodenal Ulcer	Gastric Ulcer	Pyloric Obstruction	Doubtful
1st	14	7	6	13	2	2	1
2nd	7	4	2	8	2	1	3
3rd	5	2	0	6	0	0	2
4th	4	1	0	4	1	1	1
5th	0	0	0	5	1	1	1
6th	0	0	0	1	0	0	0
Total	30	14	8	37	6	5	8

The striking feature of these records is that in the course of 130 *x*-ray examinations pyloric obstruction was encountered only five times, whilst the appearances of an active ulcer crater were present on no fewer than 43 occasions. The performance of a gastro-enterostomy as part of the initial operation for a perforated peptic ulcer is therefore quite unjustified in view of the very low incidence of pyloric obstruction as a remote complication after simple suture of the perforation.

The 43 occasions on which the niche or crater of an ulcer was seen occurred in the course of the *x*-ray examination of 31 different patients. Of these, 24 suffered from recurrent symptoms of indigestion. In the case of the remaining 7 patients the *x*-ray appearances were probably due to the effects of the scarring of healed ulcers.

Secondary Operations

Secondary operations were performed on 10 patients. One of these was an emergency operation necessitated by a second perforation of a duodenal ulcer after an interval of 4 years and 3 months. During this interval the patient, a man aged 66 at the time of his first perforation, had remained completely free from symptoms until a fortnight before the second perforation, when he had a recurrence of indigestion. Skiagrams then showed slight deformity of the duodenal cap, thought to be due to scarring of the old ulcer. At the second operation a large juxtapyloric perforation was found. When last seen, 18 months after the second operation, he had again remained free from symptoms, and was in good health at the age of 72. A further skiagram at this time showed deformity of the first part of the duodenum. The stomach emptied rapidly and there was no pyloric stenosis.

The remaining 9 secondary operations were performed because of symptoms which persisted in spite of medical treatment or on patients whose livelihood depended upon an

occupation incompatible with adherence to a gastric regime adequate to keep them free from symptoms. The latter circumstance occurs commonly among hospital patients in an industrial district, and is a factor which, when duly taken into account, must be regarded as a strong indication for advising partial gastrectomy more frequently than would be justifiable in more sheltered sections of the community. The secondary operations performed are analysed in Table VIII.

TABLE VIII

Case No.	Condition	Secondary Operative Procedure	Interval After Perforation	Result
6	Pyloric obstruction	Gastro-enterostomy	6 months	Remained symptomless
9	Duodenal ulcer	Partial gastrectomy	4½ years	Died
26	D.U. and pyloric obstruction	Gastro-enterostomy	4 years	,,
33	Pyloric obstruction	,,	1 year	Remained symptomless
42	Gastric ulcer	Partial gastrectomy	5 years	,,
44	Duodenal ulcer	,,	1 year 3 months	,,
45	Hour-glass stomach	Gastro-gastrostomy	2 years	,,
62	D.U. and pyloric obstruction	Gastro-enterostomy	6 months	,,
88	Duodenal ulcer	Partial gastrectomy	9 months	,,

Two post-operative deaths occurred among the 9 patients who were submitted to an elective secondary operation. One was that of a man of 69 on whom a gastro-enterostomy was performed, and occurred from progressive heart failure five days after operation. The other occurred from acute haemorrhagic cystitis and bronchopneumonia five days after the performance of a partial gastrectomy on a woman aged 44. One woman aged 37 was completely relieved of digestive symptoms by a gastro-enterostomy, but died six months later of a carcinoma of the ovary (Case 6). Of the remainder, two patients who had a gastro-enterostomy performed for pyloric obstruction are alive and well, and have remained entirely free from symptoms four years and nine months and five years after operation respectively (Cases 62 and 33).

Three patients are alive and well seven months, three years, and four and a half years after performance of a partial gastrectomy, and have been completely relieved from digestive symptoms. Two of these operations were necessitated by renewed activity of a duodenal ulcer (Cases 44 and 88), and the third by a lesser-curve ulcer of the stomach which developed five years after perforation of a duodenal ulcer (Case 42).

One patient remains well and has had no recurrence of symptoms three years after a gastro-gastrostomy. This operation was performed for an hour-glass contraction of the stomach opposite a lesser-curve ulcer which had perforated two years previously. The patient was a man, aged 52, who was considered to be unfit to stand a partial gastrectomy. He made an entirely uncomplicated recovery from the gastro-gastrostomy, with immediate relief of the severe pain from which he had suffered for six months. He has now remained free from symptoms for three years and nine months (Case 45).

Summary and Conclusions

A series of 100 cases of perforated peptic ulcer were treated by simple suture of the perforation, with 17 deaths. The death rate was highest among the gastric ulcers, and the incidence of these was higher in women than in men.

The after-history of 70 of the 83 surviving patients was studied in a follow-up clinic for periods up to five years.

A recurrence of digestive symptoms occurred in 38 cases, in 14 of which they were severe enough to require readmission to hospital. The rate of recurrence of symptoms was highest in those patients who had suffered longest from their ulcer before perforation occurred.

On the 70 patients attending the follow-up clinic 130 *x*-ray examinations of the stomach and duodenum were made. Evidence of a persistent or recurrent ulcer was found on 43 occasions. Pyloric obstruction was found on only 5 occasions.

Ten secondary operations were performed, with 2 deaths: suture of a second perforation (1 case), gastro-gastrostomy for hour-glass stomach (1 case), gastro-enterostomy for pyloric obstruction (4 cases), partial gastrectomy for recurrent ulcers (4 cases). There has been no return of digestive symptoms after any of these operations.

The evidence of this investigation provides no justification for supplementing suture of a perforation by either gastro-enterostomy or partial gastrectomy as an initial procedure. The proportion of cases eventually requiring secondary operations is in the region of 10 to 15%. Periodical re-examination will reveal the need for these when it arises, and the operations can then be performed with good results.

THE PROGNOSIS OF IMMATURITY

BY

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There are two questions to be answered in any case of immaturity: (1) Is the child likely to survive?; and (2) If he survives, will he develop into a normal person or is he likely to be mentally or physically handicapped? In other words, both the immediate and the ultimate prognosis need to be considered. The study reported below deals mainly with ultimate prognosis, but two aspects of immediate prognosis were considered—namely, the effect of birth weight and of sex on survival.

Immediate Prognosis: Method and Scope of Examination

The investigation was carried out at the Duchess of York Babies' Hospital, Manchester, in 1938 and 1939; the case sheets of all children who had been admitted between 1926 and 1938 on account of immaturity, and who had weighed 5½ lb. (2.5 kg.) or less at birth, were examined.

TABLE I.—*Mortality and Result of Follow-up of Children Admitted to the Duchess of York Babies' Hospital on Account of Prematurity, 1926–38*

Birth Weight in lb. (kg.)	Males			Females			Both Sexes	Follow-up			
	No. Admitted	No. Dying	Percentage Surviving	No. Admitted	No. Dying	Percentage Surviving	Percentage Surviving	Cases	Alive	Dead	Untraced
1–2 (0·45–0·9)	4	4	0	6	4	33	20	2	1*	0	1
2– (0·9–) ..	11	10	10	10	7	30	20	4	2†	0	2
2½– (1·23–) ..	19	14	27	34	19	45	38	20	9	1	10
3– (1·36–) ..	35	21	40	37	14	63	52	37	17	1	19
3½– (1·6–) ..	52	31	41	37	15	60	49	43	11	4	28
4– (1·8–) ..	32	10	60	25	10	60	65	37	5	2	30
4½– (2·0–) ..	28	14	50	24	6	75	62	32	11	0	21
5–5½ (2·26–2·5)	23	6	74	20	7	65	67	30	2	0	28
Total ..	204	110		193	82			205	58	8	139

* This child was not seen, but was reported as normal by parents.
† These two children were examined. One was seen at the age of 1 year; its mental development was average, but it was under weight. The other child was near the average weight for its age (4 years), but it had Little's disease and a marked degree of mental deficiency (I.Q. 67%).

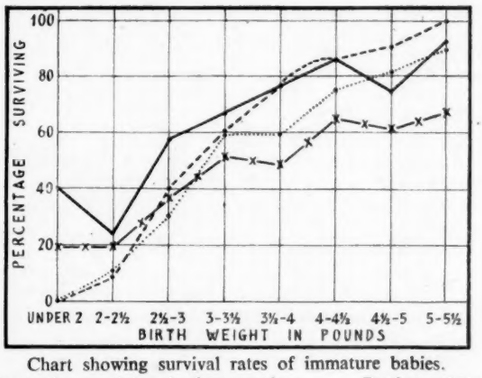

Chart showing survival rates of immature babies.

Proportion surviving the first month: ———, Duchess of York Babies' Hospital, Manchester, 1926–38. - - - - -, City of Birmingham Maternity Home, 1931–43.

Proportion surviving the first year: ×—×—×, Duchess of York Babies' Hospital, Manchester, 1926–38. . . . . , Warwickshire, 1942 and 1943.

Birth weights are given in metric terms in Table I.

The effect of *birth weight* is shown in Table I. This suggests that the child's chances of survival vary directly with the birth weight; the critical birth weight appears to be between 3 and 3½ lb. (1.36 and 1.6 kg.); below this figure the chances of survival diminish rapidly. This is in accordance with the findings of other workers; in the accompanying Chart the rates of survival of the Manchester babies are shown graphically; on the same chart the figures obtained for Birmingham by Crosse (1945) and for Warwickshire by Brockington (1944) are plotted. In all curves there is a steeper fall at the 3–3½ lb. level. The effect of *sex* on prognosis is also shown in Table I. It will be seen that the male infant does not stand immaturity as well as the female; but it must be remembered that the average male weighs more than the average female at birth, so that in comparing males with females of the same weight we may be comparing individuals of different degrees of immaturity. The

TABLE II.—*Age at Death; Children Admitted for Prematurity to the Duchess of York Babies' Hospital, 1926–38*

Age	No. of Deaths	Birth Weight*							
		1–2 lb.	2–2½ lb.	2½–3 lb.	3–3½ lb.	3½–4 lb.	4–4½ lb.	4½–5 lb.	5–5½ lb.
0– 1 week	45	6	9	10	10	6	0	4	0
1– 3 weeks	47	0	6	10	6	8	8	7	2
3– 4 „	23	0	1	3	8	8	0	2	1
4– 8 „	44	1	1	5	6	10	6	7	8
2– 3 months	18	0	0	2	2	10	2	0	2
3– 4 „	11	1	0	3	3	2	2	0	0
4– 6 „	2	0	0	0	0	1	1	0	0
6–12 „	2	0	0	0	0	1	1	0	0

* For metric equivalents see Table I.

ages at which the children died are shown in Table II; it will be seen that 60% of the deaths occurred in the first month, and would be reckoned as neonatal deaths.

Ultimate Prognosis

The main studies of the after-histories of immature infants which have been made by other workers are summarized below. The amount of disagreement is disconcerting; the investigators can be ranged in two groups—those who consider that the ultimate prognosis is on the whole good, and those who take a more gloomy view. Among the optimists are Hess, Gesell (1933), Mohr and Bartelme (1930), Levine and Gordon (1942), and Comberg (1927). (With the exception of Comberg's work all these studies were carried out on American children.) Ylppö (1920), Capper (1928), Rosanoff and Inman-Kane (1934), Brander (1937), and Looft, who studied European children, must be ranked with the pessimists.

The disagreement between these groups of workers is probably due in no small measure to differences in the samples studied. For example, Hess's extensive observations (250 cases) were made on children followed up from his own premature station. These children were seen regularly after "graduation"; they were therefore better supervised than those studied by other workers, who in most cases had not been examined since discharge from hospital, until they were summoned for the investigation in question. Not only did the samples differ but there was great variation in the times and places of the studies. For example, Ylppö carried out his depressing study in 1919, just after the war.

Apart from Illingworth's (1939) work on weights of children who had been immature at birth—he studied out-patients in a children's hospital—there appear to be no observations on the after-history of British children born prematurely.

Method and Scope of Investigation

The work was carried out in Manchester in 1938 and 1939. Three groups of children were studied from the point of view of mental and physical development: (1) children admitted to the Duchess of York Babies' Hospital between 1926 and 1938 on account of immaturity; (2) children immaturely born but admitted to the same hospital for reasons other than immaturity; (3) immature children attending the Manchester child welfare centres. In all, 217 children were followed up.

It was hoped that, in a city the size of Manchester, a large number of immature children would be available for examination; in fact, 1,000 was the target. The follow-up, however,

Summary of Literature

Name, Place of Investigation, and Date	No. of Cases	No. of Children Followed up and Examined	Results and Main Conclusions
Ylppö Germany 1919	668		*Prognosis unfavourable.* 7·4% of children examined were idiots or imbeciles. 3·1% had Little's disease. They catch up in weight at 4 years. From the point of race hygiene they are not worth saving
Comberg Germany 1927	97	73	*Prognosis favourable.* "Mental deficiency does not occur in prematurity, even in cerebral haemorrhage; there is no relation between cerebral symptoms in early life and later impairment of intelligence. (Yet 6·8% of her cases were mentally defective, and Terman's figure for unselected school-children is 2·6%)
Capper Vienna 1928	437	103	*Prognosis unfavourable.* Of those that survive, the majority are mentally and physically undeveloped. The important cause of death is undeveloped vascular tissue
Looft France 1931	105	105	*Prognosis unfavourable.* Among 105 private patients he had 32 with disordered intelligence; 19 of these had Little's disease, and 3 had epilepsy
Mohr and Bartelme Chicago 1930	113	113	*Prognosis favourable.* Infants compared with full-term siblings; no significant difference in mental development. (Yet 9 had disturbance of reflexes, 9 had strabismus, 14 had "heart conditions," and 3 were mentally retarded)
Gesell New Haven 1933			*Prognosis favourable.* Prematurity in itself does not alter marked course of mental development. It carries with it hazards which inflict temporary or permanent penalty. The infant is protected by inherent factors of organic maturation
Rosanoff and Inman-Kane California 1934	381	146	*Prognosis not very favourable.* Premature birth is an aetiological factor in mental deficiency, but is not, in itself, a cause of mental deficiency. The damage is caused by cerebral trauma during birth. (10·27% of his cases were mentally defective: I.Q. under 76)
Hess Chicago 1934	250	250	*Prognosis favourable.* Boys catch up in weight at 4 years, girls earlier. Children of 4½ lb. (2 kg.) and over gain more rapidly than those under 3½ lb. (1·6 kg.). There is no difference in mental development between prematures and their siblings, except for those injured at birth. (Of his 69 cases of intracranial haemorrhage 10 were feeble-minded and 12 were retarded)
Brander Helsinki 1937	230	230	*Prognosis unfavourable.* Average I.Q. of prematures lower than that of a non-selected group of children of same age. He says that trauma at birth is more definitely an unfavourable factor than birth weight alone
Illingworth London 1939	150	150	Compared weights of immaturely born infants with those of normal weight. (Subjects were out-patients of a children's hospital.) 86% of premature series under weight; 34% of control series under weight
Tow U.S.A. 1942			*Prognosis fairly favourable.* Majority develop normally but are slow in learning to co-ordinate. Because the premature infant is liable to cerebral anoxia, neurological and psychological complications are possible
McKee *et al.* (quoted by Gordon and Levine) U.S.A. 1942			*Prognosis favourable.* The chances that these infants develop into healthy and fit persons are not appreciably less than those of infants born at term
Collis and Majekodunmi Dublin 1943	45	38	*Prognosis favourable.* Premature children will generally grow up normally. (One of his cases had Little's disease, one had right hemiplegia, and 4 had speech defects)
Bourne London 1943			The baby of 5 lb. (2·27 kg.) will grow to normal stature in 4 to 5 years; the child of 4 lb. (1·8 kg.) or under will always be small, though it may reach a high grade of mental development

was disappointing in the extreme; it was surprising how quickly the Mancunians changed their dwelling-places. Reply-paid postcards were sent, advertisements inserted in the Press, and posters put up in shops. The B.B.C. was approached, but could not decide into what type of programme such an appeal would fit. (Capper had a similar experience in Vienna in 1928; he even enlisted the help of the police!) Moreover, the work was interrupted by the onset of the recent war; there was a general scatter to Blackpool, and many children were lost. The study is therefore incomplete.

Scope and Method of Examination

The children's weights and heights were taken and a general physical examination was performed. A medical history was then got from the mother; the children under 3 years of age were tested with the Gesell development schedules, and those of 3 and over with the Binet-Simon (Stanford revision) tests. The results of the Gesell tests were recorded in terms of months below or above average development for age; intelligence quotients were calculated for the older children. In every case the chronological age, and not the conceptional age, was used; the ages were not corrected in any way for prematurity.

The weights were compared with the average weights of children of the same age. A further comparison was made with expected weights. The expected weight of a child at any given age was calculated by subtracting the difference between the birth weight and the average birth weight (taken as 7½ lb. = 3.4 kg.) from the average weight for the age. Thus if a 7½-lb. baby is expected to weigh 15 lb. (6.8 kg.) at five months, a 5½-lb. (2.5 kg.) baby is expected to weigh 13 lb. (5.9 kg.) at five months. This method of calculating the expected weight is a convenient one, but it assumes that all children, regardless of birth weight, gain at the same rate. This is probably quite an unjustifiable assumption; it is therefore interesting that in this study the children appear to approximate to their expected weights, as calculated by the above methods, while falling below the average weights for their ages (Table III). For example, at 4 years the children are still only 91% of the average weights for their ages, whereas they are 98% of their expected weights. These results do not agree with those of Hess; he says that if age is reckoned from conception the children tend to catch up to the average at the age of 4 years. (This correction of Hess's would give the child at the most the benefit of two months; the conceptional age was avoided in this study because of difficulty in establishing the date of conception.)

It may be argued that the children's weights were compared with standard figures (Holt's), and that possibly the general level of weights of Manchester children might not be so high. When the experiment was designed it was intended to compare the children with full-term children from similar environments. Circumstances, however, made this impossible. In order to find out how nearly the weights of full-term Manchester children approximated to those in the standard tables, averages were taken of the weights of 100 children of each age group up to 5 years. These figures were taken from the records of one of the child welfare clinics. It was found that these averages did not differ greatly from the standard figures; in all cases the Manchester children were a few ounces heavier than would be expected from the tables; if, then, the figures obtained from the immature children had been compared with these Manchester results the percentages of average weight would have been, if anything, slightly lower.

The results of the studies on mental development are given in Tables III and IV. When considering children under 3 years it must be remembered that the Gesell schedules test *levels* of development; they are therefore not strictly comparable with the Binet-Simon tests, which try to determine with how much intelligence the child has been endowed. It will be seen that the developmental levels of the immature child are, on the whole, not up to the average; it cannot be inferred from this, however, that the children will not catch up. The figures suggest that there is a slowing down of the process of development; this is in agreement with other workers. There is no doubt that standing, walking, and talking are often delayed. (In the Gesell schedules motor characteristics, language, adaptive behaviour, and personal social behaviour are all taken into account.)

TABLE III.—*The Relation of Weight to Average Weight and to Expected Weight for Age, and the Intelligence Quotients for Age*

Age in Years	No. of Obs.	Percentage of Average Weight for Age	Percentage of Expected Weight for Age	Intelligence Quotient	Developmental Level
1	52	87	102		− 2 months
2	52	88	100		− 1 month
3	47	89	97	92	
4	35	91	98	92	
5	25	91	100	93	
6	6	82	86	92	

TABLE IV.—*Physical and Mental Development of Children Immaturely Born*

Birth Weight*	% of Average Weight for Age	% of Expected Weight for Age	Intelligence Quotient	Developmental Level	No. of Cases
Under 2½ lb.	80	92	89	Average	5
2½–3 lb. ..	85	91	88	− 3 months	15
3–3½ lb. ..	86	99	82	− 3 ,,	16
3½–4 lb. ..	86	99	88	− 2 ,,	12
4–4½ lb. ..	91	101	90	− 2 ,,	32
4½–5 lb. ..	90	100	90	− 3 ,,	41
5–5½ lb. ..	90	98	96	− 1 month	96

* For metric equivalents see Table I.

The intelligence quotients of the children aged 3 to 6 years inclusive are also given in Table III. The general impression gained is that *most* of them would not be very brilliant children. Table IV suggests that the higher the birth weight the higher the intelligence quotient is likely to be.

No results of the inquiry into language development are given. The mothers were asked when the children said their first words and when they said sentences, but the mothers' testimonies were considered inaccurate, as they had in many cases only hazy recollections of their children's first efforts at speech. A distinct impression was gained that speech was delayed; this was particularly so in the case of twins and triplets. (The speech delay accounts partly for the low ratings in the Gesell tests in the children under 3.)

Discussion

Do these results contribute anything to the present state of knowledge concerning the ultimate prognosis in immaturity? There are not enough cases to draw any hard-and-fast conclusions, but the tables suggest that in many cases development, both mental and physical, is delayed, that many of the children tend to remain smaller than their fellows—at least up to the age of 6 years—and that most of them will not reach a very high degree of intellectual attainment. But this is very different from Capper's suggestion that they become dull and backward children, and that many of them become candidates for mental hospitals.

The question at stake is: Does prematurity by itself induce a mental and physical retardation? If so, is this permanent? There are four main possibilities with regard to the mental and physical development of the immaturely born child. (1) He may continue to gain at his foetal growth rate until he catches up with the average child for his age. His mental and physical development may then proceed at the same pace as that of his full-time siblings. (2) He may gain very slowly, at a rate less than that of an average child; he may be late in walking and talking. He may, however, catch up eventually in mental or physical development, or in both. (3) His physical or mental development may be retarded, and he may never quite catch up with his fellows. (4) He may develop Little's disease; from this he may partly recover, but it is likely that he will be permanently damaged—he may be feeble-minded or imbecile, and may not learn to walk.

These possibilities will now be considered in more detail.

1. *The Immature Child who Catches Up in the First Year.*—Scammon (1921) is of the opinion that the growth tendency of immatures is in general that of foetuses of the same size and age rather than that of full-term children. He says that, after a short period of retarded growth incident to the adjustment to the extrauterine environment, immatures tend to regain the

foetal rate of growth and to follow this course of growth until some time in the latter part of the first year, when the rates of foetal and postnatal growth approximate each other. He admits that his results are not in agreement with those of all other workers. Any physician who has worked in a child welfare centre will have had experience of this type of immature child. The foetus gains 10 to 12 oz. (280–340 g.) a week in its last month; a child who gains at this rate, even if he weighs more than 5½ lb. (2.5 kg.) at birth, may be suspected of immaturity. The immature child, however, who comes early to the welfare centre has usually survived the accident of premature birth with very little disturbance, and it is possible that those who behave in this way are those who sustained no intracranial complications at birth. It would be useful if we could forecast from data such as birth weight, degree of prematurity, obstetric history, illnesses of mother, and so on, which children would be likely to behave in this way; but it is not possible in a study of this kind. (Some further work on growth rates of immatures in the first year is in progress at the moment.)

2. *The Immature Child who Progresses Slowly but Catches Up Eventually.*—Most authorities agree that a large number of immature children are late in walking and talking. How is this to be accounted for? Some factor has disturbed the normal pattern of development; the abrupt change of environment before the foetus is fully prepared for the outer world may be responsible, or there may have been minor injuries to the central nervous system. Gesell is of the opinion that the infant is protected by the inherent factors of organic maturation, which make for a normal course of mental growth. This may be so, but the fact that mental and physical growth are often *slowed down* is incontrovertible. To what can this be attributed? It may be attributed to "shock"—which merely begs the question—or to failure of the infant to adapt himself readily to the postnatal environment. There may be intracranial complications, but the fact that the retardation is only temporary suggests that there is no organic damage.

3. *The Immature Child who is Retarded and Never Quite Catches Up.*—The figures in Tables III and IV suggest that a large number of the children (up to the age of 6) never catch up with their full-term siblings from the point of view of weight. The fact that most of the intelligence quotients are below 100 suggests that a large number of them may have been in a slight degree mentally handicapped. Levine and Gordon (1942), in a study of great interest on the physiological handicaps of the immature infant, point out that the tendency to haemorrhage is due not only to the persistence of the foetal type of capillaries (the archicapillaries of Capper) and the deficiency of vascular elastic tissue, but also to the fragility of the immature capillaries, the low prothrombin content of the plasma, the low body reserves of vitamin C, and the damaging effect of anoxia on capillary integrity. Tow (1944) is of the opinion that most of the cerebral injuries inflicted on the immature child are due to cerebral anoxia. Taking all this into account, one might say that, in the lower birth weights at any rate, the risks of immaturity are the risks of intracranial vascular damage. It is put forward as a possible explanation that this third group of children, slightly retarded mentally or physically, or both, may have sustained minor intracranial damage at birth, which was not severe enough to be accompanied by motor manifestations.

4. *The Immature Infant who Develops Little's Disease or Motor-nerve Symptoms.*—Whereas Little's disease in the full-term child is supposed by many to be due to agenesia of the motor cortex, the cases associated with immaturity are commonly due to cerebral haemorrhage. The condition is commoner in the children with the lower birth weights owing to the greater immaturity of the vascular tissue. It accounts for most of the cases of gross mental deficiency, a few of which are included in all of the studies quoted above. Ylppö (1920) found that 3% of the children he studied suffered from Little's disease; Looft found that 9% of his cases had motor-nerve symptoms; Hess, in his 69 patients who were thought to have intracranial haemorrhage at birth, found only 68% of these of average intelligence, while 26% showed evidence of motor-nerve damage; 13 of these children were mentally retarded. Evidently the presence of intracranial haemorrhage is a major factor in making a prognosis in the case of an immature child.

Conclusion

Summarizing, there seems to be general agreement that normal development is possible even in children with the lowest birth weights, and that severe degrees of mental retardation are not as a rule caused unless definite intracranial complications occur at birth. The differences of opinion exist mainly with regard to intermediate groups—i.e., those who develop slowly and those who never quite catch up. How common are these two groups? And should they be attributed to intracranial damage, possibly microscopic? Is it feasible to suggest that "shock" is responsible for the group which catches up, and that microscopic haemorrhages are responsible for the group which does not catch up?

The persistence of small stature and weight into adult life is exemplified by the following extract from a letter received from an adult who had been immaturely born. (Several similar letters were received as the result of unwanted Press publicity, many containing references to pint or quart pots.) "I am a twin and did not weigh 2 lb. (0.9 kg.) at birth; I could fit into a pint jug quite easily. I wasn't expected to live, but, having been born into the public business, I was brought up on brandy and milk, and I thrived on it. I did not grow very fast—I have reached the age of 45. . . . I am not very tall now, only 4 ft. 7 in. (140 cm.), and am still called Midge. I am considered fairly intelligent, and passed my scholarship at school."

It is obvious from this study that more work requires to be done. The intelligence quotients and weights of older immature children, of school age, need investigation. It would be useful, too, to study boys and girls separately. (Some work on these lines on primary-school children is now in progress.)

Summary

The subject of immaturity is considered from the point of view of immediate and ultimate prognosis.

The relation of birth weight and sex to mortality is discussed.

A review of the literature on the after-history of immature infants is given.

The results of a follow-up of 217 immature children from the point of view of mental and physical development are given.

The results suggest that both mental and physical development are often delayed, and that many children do not reach a high level of intellectual attainment.

Four possibilities with regard to mental and physical development are discussed.

I should like to thank Dr. Catherine Chisholm and the other physicians of the Duchess of York Babies' Hospital for permission to use their cases; Dr. W. J. Martin for help in presenting the material; and Mrs. Elaine Hartree for her voluntary assistance.

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The Minister of Health has had his attention drawn to a number of instances in which the efficiency of the public health services is being prejudiced by the difficulty of finding proper and suitably situated accommodation for midwives, district nurses, and health visitors. So far as midwives are concerned, he has recently suggested to local supervising authorities that they should approach the housing authority for help. On all larger housing estates it will be to the obvious benefit of the tenants if accommodation can be provided on the estate itself. The Minister does not think that with the present housing stringency it would be right for authorities to allot a whole house for the sole occupation of a single person, but suitable arrangements can often be made for the midwife or other officer to share a house with other appropriate occupants.

TREATMENT OF MUSTARD GAS BURNS*

BY

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ALFRED JOHN HOWARD, M.A.

AND

DAVID THOMSON, O.B.E., M.B., Ch.B., D.P.H.

The desirability of finding a simple yet demonstrably effective treatment for burns arising from contact with the liquid or vapour form of $\beta\beta^1$-dichloroethyl sulphide led us to consider the problem from the physico-chemical standpoint. A careful study of the literature from 1917 onwards has failed to show any marked advance upon the use of Dakin's solution and bleaching powder ($CaOCl_2$), except that chloramine-T is regarded as more suitable in view of its stability and its non-irritating action.

Very early in the military history of mustard gas it was recognized that its action was most severe on those parts of the human body prone to perspiration. Inexact references to this fact usually mention that mustard gas is lipoid-soluble and that this is the key to the enhanced irritant action. Since human perspiration is an aqueous system, probably an oil-in-water emulsion, the term "lipoid solubility" lacks precision. What is certain is that mustard gas is only slightly soluble in water (possibly 0.07% at 10° C.), but is quite soluble in various organic solvents (notably ligroin, kerosene, petrol, CCl_4, CS_2) and in animal oils and fats. Its solubility in vaseline and paraffin wax is only slight.

Our basic assumption was that mustard gas was taken up by the skin, especially where perspiration was present, by adsorption, as distinct from solubility. This would account for its rapid take-up by an aqueous system. Anything that would increase the surface activity of mustard gas should accelerate its take-up and enhance its vesicant action. As will be seen later, this assumption receives confirmation when the surface-active material lanolin is used.

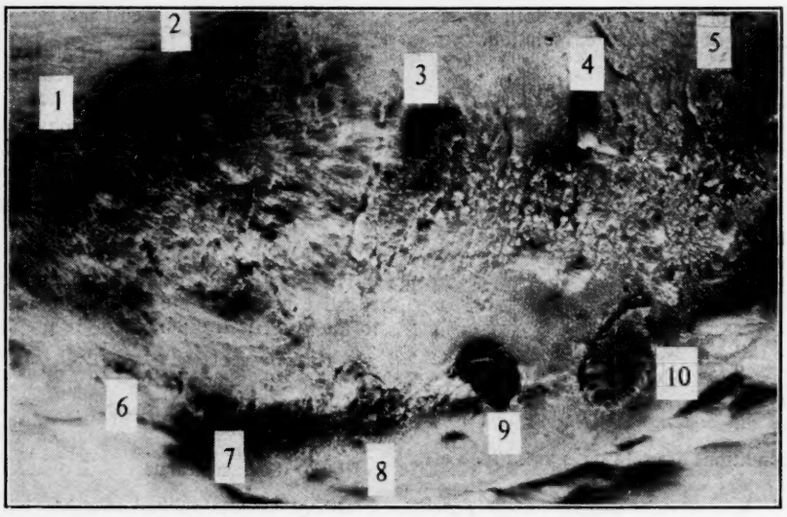

FIG. 1.—Condition of rabbit's back 14 days after application of emulsion for mustard gas burns.

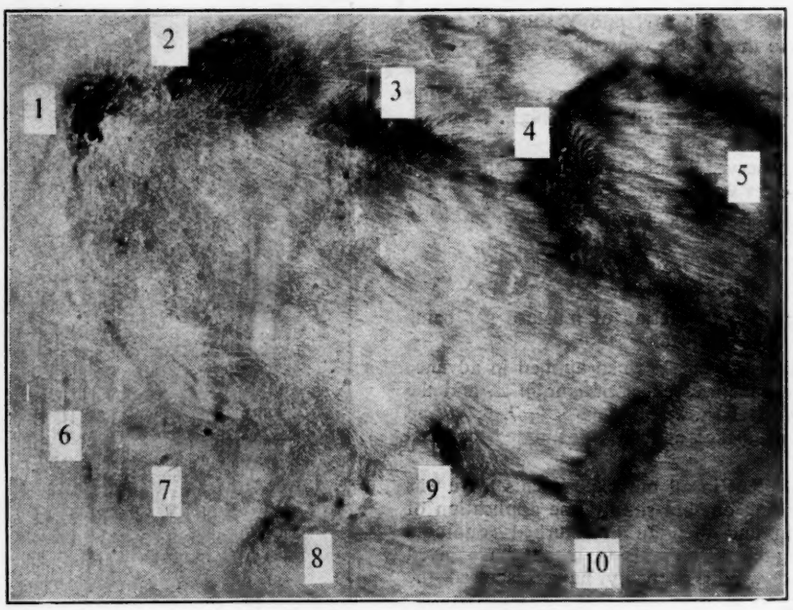

FIG. 2.—Condition of same rabbit 21 days after application. Note complete healing at sites 6, 7, and 8.

Two independent types of adsorption are possible in regard to the take-up of mustard gas by the perspiring skin: (1) adsorption due to the extensive interface presented by the capillary structure of the skin, and (2) adsorption on the fat globules present in perspiration.

For any effective treatment of skin that has been contaminated by mustard gas it is necessary, therefore, to recognize the importance of adsorption as a colloidal phenomenon which can attract mustard gas to a given neutralizing agent. The usual method of swabbing with solvent, followed by an application of a paste of vaseline and bleaching powder (with its essentially short time of contact), and finally by scrubbing with soap and water, has obvious defects when considered from the colloidal point of view.

Swabbing with an organic solvent is recognized as of value. The A.G. Ointment No. 1, however, aims at bringing into intimate chemical reaction two materials which are both insoluble in the common vehicle, vaseline. The limited solubility of mustard gas in vaseline, itself entirely inert chemically and from the capillary-adsorption standpoint, is bad enough, but when this is supposed to lead to a chemical reaction with solid bleaching powder presented as a powder suspended in vaseline the whole basis of the scheme is unsound.

We have used chloramine-T throughout our experiments, with the recognition that its chemical behaviour with mustard gas is quite different from that of bleaching powder. Its permanent stability under our conditions, coupled with its non-irritating action, commended itself. Fundamentally, we have aimed at providing a means of adsorbing and solubilizing mustard gas from the skin and exposing it to the action of chloramine-T both in solution and in suspension at the same time. We have used stable emulsions of carbon tetrachloride and of white spirit in either aqueous or glycerol-saturated solutions of chloramine-T. An inert emulsifying agent was essential and colloidal aluminium hydrate was chosen.

Experiments were made on rabbits. The back of the animal was shaved and then allowed to rest for 24 hours before applying liquid mustard gas from a platinum loop delivering a drop of about 1 mm. diameter. A control drop was always allowed to develop without interruption to serve as a datum for com-

* This article was submitted for publication on Jan. 15, 1940, and has not been revised to take into consideration any work published since that date.

parison. The animals were photographed after 14 and 21 days respectively.

Two emulsions may be noted from our series:

(X)	Glycerol .. .. 100 g.	A
	Chloramine-T .. .. .. 18 g.	A
	Carbon tetrachloride	B

Equal volumes of A and B emulsified. Aluminium hydroxide = 5% of the total emulsion prepared (by weight).

(Y)	Water .. .. 100 g.	A
	Chloramine-T .. .. .. 10 g.	A
	White spirit	B

80 parts of B were emulsified in 20 parts of A (by volume). Aluminium hydroxide = 5% by weight of the total emulsion prepared.

Both emulsions were of the oil-in-water type. Both contained solid chloramine-T in excess of its saturated solution.

A lanolin paste was also prepared:

(Z) Lanolin	80 g.
Chloramine-T	20 g.

Intimately rubbed to a smooth cream.

Referring now to Figs. 1 and 2, there are ten points where liquid mustard gas was applied, under conditions as follows:

1. Control (undisturbed)
2. Emulsion Y was applied to the site before mustard
3. „ X „ „ „ „ „ „ „
4. Lanolin Z „ „ „ „ „ „ „
5. Emulsion Y „ „ 2 minutes after the mustard
6. „ „ „ „ 5 „ „ „ „
7. „ X „ „ 2 „ „ „ „
8. „ „ „ „ 5 „ „ „ „
9. Lanolin Z „ „ 2 „ „ „ „
10. „ „ „ „ 5 „ „ „ „

Fig. 1 represents the conditions after 14 days and Fig. 2 after 21 days.

Certain peculiarities are immediately obvious in the general observations which follow:

(*a*) Lanolin Z has expedited eschar formation much beyond that of the control. (See Fig. 1, sites 4, 9 and 10.)

(*b*) Prior application of emulsions X and Y shows a course apparently comparable to that of the control. (See Figs. 1 and 2, sites 2 and 3.)

(*c*) The later the application of the emulsions after applying the mustard drop the better the result. (See Figs. 1 and 2, sites 5, 6, 7, and 8.)

(*d*) The time factor observed in observation (*c*) tallies with that in observation (*a*), sites 9 and 10.

(*e*) Fig. 2, sites 6, 7, and 8, shows complete healing, emulsion X being especially effective.

Discussion

The above results point to the action of mustard gas being a *surface* effect in the first instance.

The failure of emulsions X and Y when applied in advance of the mustard gas, the enhanced effect of lanolin Z, and the unexpected time factor effect shown in sites 5, 6, 7, 8, 9, and 10 all fall into line if a surface action is postulated, coupled with a solubility factor.

It is important to note that in all our experiments there was no rubbing and no washing off, but simply one application of the emulsion or lanolin and then an undisturbed condition. Undoubtedly a washing-off with emulsion would have given even better results and would probably have disguised the peculiar time effects observed.

We believe our results show that there is a threshold or lag period after mustard-gas liquid is applied to the skin, during which time there is the beneficial factor of evaporation of mustard gas from the increased area of its spreading. Accordingly, in sites 5, 6, 7, and 8 we are still in the lag period of skin attack, and, moreover, owing to evaporation the emulsion subsequently applied has less mustard gas to neutralize.

Anything which concentrates mustard gas locally, as by solution, and therefore by inhibiting evaporation, will either speed up skin attack or resist the action of the neutralizing agent. Lanolin Z—sites 4, 9, and 10—supports this view, mustard gas being soluble in lanolin and chloramine-T being insoluble in it. Thus there is a localized retention of mustard gas on the one hand and inability of the neutralizing agent to act on the other. Moreover, the known capillary-active character of lanolin (considered as a colloidal material) would hasten penetration through the skin.

Similarly, sites 2 and 3, though not showing the increased severity of sites 4, 9, and 10, fall into line on the theoretical arguments advanced. Mustard gas is localized by solubility in the continuous phase of the emulsion and its evaporation is retarded. Even more striking results in this direction might be anticipated had the emulsions been of the opposite phase-type —i.e., water-in-oil. An obvious point requiring investigation which arises out of sites 2 and 3 is the *rate* of chemical union between mustard gas and chloramine-T when the reaction takes place in solution.

The above experiments also point to the need for an examination of the actual physico-chemical mechanism by which mustard gas attacks the skin surface.

Incidentally, in light of the above, doubt must be expressed as to the wisdom of instilling a lanolin salve into the eye to counteract mustard gas (see R. Lindsay Rea, *British Medical Journal*, 1939, **2**, 881).

Prophylaxis

The data thus far led us to consider the character of an effective barrier to mustard gas to be applied before exposure to the gas. Two ointments were prepared:

(O′)	Glycerol	50 g.
	Chloramine-T	18 g.
	Zinc oxide	50 g.
(O″)	Glycerol	50 g.
	Chloramine-T	50 g.
	Sodium stearate	2 g.

Ointment O′ was rubbed to a smooth cream; O″ was a gel. Both contained chloramine-T in excess of saturated solution.

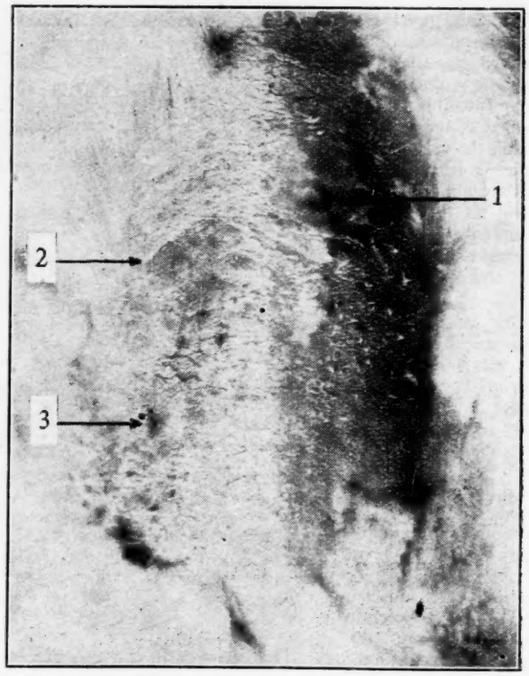

FIG. 3.—Condition of a rabbit's back 8 days after application of ointment as a prophylactic against mustard gas burns.

Referring now to Figs. 3 and 4, site 1 is the control mustard application on the back of a rabbit, 24 hours elapsing after shaving. Sites 2 and 3 had ointment O′ and O″, respectively,

rubbed in, and five minutes later the mustard-gas liquid was applied as previously described, using a platinum loop. Nothing further was done except to put a lint jacket over the rabbit's body about 15 minutes after applying mustard gas to site 3. The photographs were taken 8 and 23 days respectively after application of the mustard gas. *The marked superiority of ointment O′ is shown in site 2.*

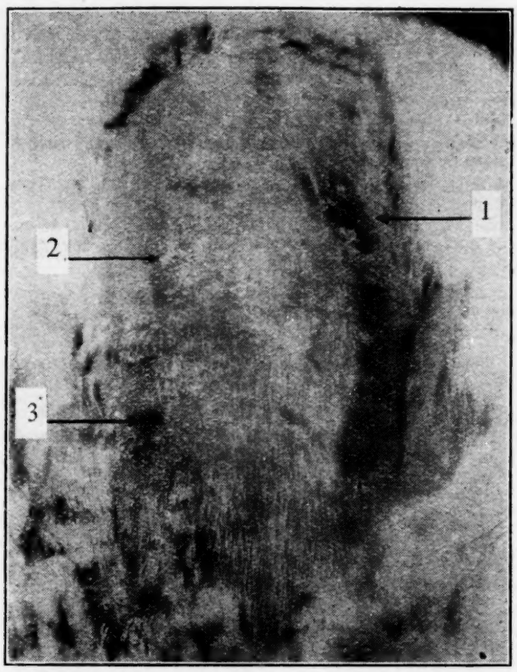

FIG. 4.—Condition of rabbit of Fig. 3 23 days after application of prophylactic ointment. The marked superiority of ointment O′ is shown at site 2.

Zinc oxide was chosen because of its known value in the so-called S.R. lacquers (sulphur-resisting lacquers) used in the internal lining of food cans. During thermal processing, especially of meat foods, sulphur compounds liberated from sulphur-bearing proteins interact with tinplate to form the blue–purple sheen of tin sulphide, often observed inside cans on opening. Ordinary plain (transparent) lacquer still permits such staining, whereas the same lacquer containing very small amounts of zinc oxide in suspension completely avoids sulphur-staining.

Research is obviously required into the possible chemical neutralizing effect of ZnO on mustard gas, the ZnO being suspended in an aqueous solution (or emulsion in saturated aqueous solution) of mustard gas. However, the barrier presented by ointment O′ is now beyond dispute, whatever the actual mechanism of its action.

At the annual general meeting of the Society for Relief of Widows and Orphans of Medical Men, held on May 8, with Dr. R. A. Young, president, in the chair, one vice-president and eight directors were elected to fill the vacancies in the Court of Directors. The annual report showed that the total membership was 282. During 1945 fifty-five widows received relief amounting to £4,837. Each widow over 65 years of age received £75, and those under 65, £60. In addition a Christmas present of £15 was made to each widow. A legacy of £5,000 from the late Dr. Charles Reid, of Stafford, was invested in 2½% Consolidated stock. The invested capital of the society, which is over £140,000, can never be sold and used as income. Many members joined H.M. Forces during the war, and those who have been demobilized are asked to notify the secretary of their present address. Full particulars of membership, which is open to any registered medical man who, at the time of his election, is resident within a twenty-mile radius of Charing Cross, may be obtained from the secretary (11, Chandos Street, Cavendish Square, W.1).

VOLVULUS OF THE SMALL INTESTINE

BY

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AND

W. H. KIRKALDY-WILLIS, F.R.C.S.Ed.

(From the Native Civil Hospital, Nairobi, Kenya)

Volvulus of the whole or part of the small intestine is said to be exceedingly rare in Europe and America. We have had seven cases—all natives of East Africa—during 1945. Braimbridge, in a personal communication, states that in 25 years of surgical practice in Kenya he has found it the commonest cause of acute intestinal obstruction in the native, occurring in more than half his cases. During 1945 there were 21 admissions with acute intestinal obstruction into the above hospital:

Strangulated inguinal hernia	4
Intussusception (all adolescents or adults)	4
Meckel's diverticulum	1
Bands and adhesions	3
Volvulus of pelvic colon	2
Volvulus of small intestine	7

Symptoms and Signs

The age of an East African is seldom exactly given, for he does not know the year of his birth but only the age group to which he belongs. These patients were variously estimated as being between 20 and 45 years old, and they all complained of abdominal pain, distension, and tympanites. The fact that the majority of cases came to hospital within a few hours of onset indicates the severity of the symptoms. Vomiting, usually regarded as an early and severe symptom, was not a feature, and was recorded in only three of our cases. Rigidity usually masked any visible peristalsis, although this was observed in one case. The abdomen was silent in five. Absolute constipation was not an invariable rule; one of the patients had diarrhoea, and one passed blood and mucus per rectum (he had also partial pelvic colon volvulus). One of the patients (the only female) was eight months pregnant, and her pains were at first thought to be labour pains. In her post-operative convalescence she was delivered of a living child. The following table gives a summary of the seven cases discussed in this report.

Summary of Cases

Case	Sex	Date of Admission	Duration of Symptoms	Interval between Admission and Operation	Type	Result
1	M.	4/1/45	12 hours	1 hour	Whole of S.I.	Recovered
2	M.	24/1/45	1 hour	2 hours	,,	,,
3	M.	14/4/45	36 hours	4 ,,	,,	Died
4	F.	31/5/45	48 ,,	20 ,,	Combined S.I. and L.I.	Recovered
5	M.	26/7/45	4 ,,	18 ,,	Independent S.I. and L.I.	,,
6	M.	6/11/45	4 days	24 ,,	Whole of S.I.	,,
7	M.	12/11/45	11 hours	2½ ,,	,,	,,

Operative Findings

A right paramedian incision was employed for preference, and the purple distended bowel could be seen usually even before opening the peritoneum. The bowel prolapsed through the wound and was reduced in all by exteriorization and rotation until the mesentery lay straight. There were no adhesions or other apparent cause within the abdomen for the rotation, except in one case in which two tapeworms, each 4 ft. (120 cm.) long, were found tied together in a massive knot at the upper end of the jejunum. Owing to the gross distension of the intestine it was found impossible to return the bowel without preliminary evacuation of the contents. In all cases, therefore, a lower loop of intestine was opened, and a rubber tube inserted through the ring of the purse-string suture. In some cases emptying was satisfactory, but in others the tube was soon blocked by undigested food and had to be removed to allow the contents to be emptied. This was done by milking the contents gently out through the enterostomy. Some gas was present, but in the main the bowel contained

dark-brown fluid with fragments of undigested food—chiefly maize husks or even whole grain. The bowel was heavy, and manipulations had to be done with care. Such manipulations obviously carried the risk of paralytic ileus, but there was no alternative. After thoroughly emptying the bowel, the enterostomy was closed by a purse-string suture; the small intestine could then be readily returned. The abdomen was not drained.

Two of the cases were complicated by rotation of the caecum and ascending colon as well; in one an accompanying volvulus of the pelvic colon was discovered after reducing the small-intestine volvulus. The gut was viable in all our cases; and it is to be observed that we did not find within the peritoneum the quantities of dark blood-stained fluid said to be so typical (Devlin, 1945.)

The female case is worthy of full description.

Case 4.—She was the only woman in the series and, as already mentioned, was eight months pregnant. An upper abdominal incision was made in the midline. Above the pregnant uterus the caecum was found in the left hypochondrium; the ascending colon had a fully developed mesentery and there was a total volvulus of the whole of the small intestine, caecum, and ascending colon. This was reduced and a colostomy made at the lower part of the ascending colon. A tube which had been inserted was soon blocked by whole maize grains and had to be removed. The consequent spilling of intestinal contents soiled the abdominal wound. An oblique incision was made in the right iliac fossa and a fresh tube, passed through this, was anchored in the colostomy opening with a view to binding the caecum in its normal position. On the thirteenth day the upper abdominal wound burst open, but the bowel did not prolapse, owing partially to the use of a prophylactic corset and partially to the plugging of the abdominal wound by the pregnant uterus. Secondary suture was performed, and on the fifteenth day she was delivered of a healthy male child despite the fact that the presentation was a breech with extended arms.

Post-operative Treatment

There was only one death in our seven cases, though the mortality is usually regarded as high (Grey Turner, 1943). We attribute the success largely to the use of post-operative gastric suction combined with adequate intravenous fluid replacement. One of us had treated four cases in the previous five years in small out-station hospitals; gastric suction was not used, and all the patients died. In the present series a Ryle tube was inserted and suction maintained for up to five days, until there was return of bowel activity as evidenced by auscultation or bowel action. Blood or plasma not being available as yet, we used 5% glucose and 0.45% saline—the latter figure being adopted to reduce the chance of pulmonary oedema from salt retention. During gastric suction the patients received one litre of glucose-saline as a basic daily ration, and one litre for every half-litre of gastric contents aspirated. The remaining two litres given during the 24 hours were 5% glucose in triple-distilled water. Five out of the seven cases had sulphonamides intravenously or by mouth. Some paralytic ileus was common to all; one case had a burst abdomen, and one patient—admitted late—died on the fifth day from peritonitis.

Aetiology

There is no reference to the subject of aetiology in those recorded cases to which we have had access. Salisbury Woods (1945), in describing a recent case, refers to 28 cases collected by Rowlands and Turner (1937), and Hamilton Bailey (1940) quotes two cases. This condition, we believe, may well be associated with the dietary habits of the African native. It is his custom to start the day by drinking up to two pints (1.4 l.) of maize-meal gruel in the early morning, and again at midday, and then taking nothing solid until the evening meal. In four of our cases the time onset was definitely known as 7 a.m., 9 a.m., midday, and 4 p.m. This sudden distension of the small intestine by thick liquid causes an overloading of one or two loops, which during exertion may become displaced and start the volvulus (Webber, 1945). The resultant spasmodic peristalsis completes the process. In one of our cases, as mentioned, there were, in addition to masses of recently digested food, two tapeworms knotted together, which may have been the starting-point. In volvulus of the sigmoid colon, chronic distension from constipation is generally considered as the *causa causans*; the process in the small intestine would thus appear to be similar. The evidence that such a large meal may be responsible is confirmed by the findings of McWatters (1945) in 12 cases in India; he suggests it followed the eating of coarse indigestible food. It is to be noted that we also dealt with four cases of acute intussusception in adults. Such cases have been described in Mohammedans by Morro (quoted by Hamilton Bailey in *Emergency Surgery*), and was at first attributed to hunger pains. It should be noted that during Ramadan, Mohammedans fast from sunrise to sunset; then they feast. The sudden gross overloading of the bowel is probably the responsible factor, as in our cases of volvulus.

Summary

Seven cases of volvulus of the small intestine are presented. The condition is relatively common in the East African native.

Reduction is best carried out by exteriorization, and emptying of the bowel by open enterostomy.

The aetiology is discussed; the practice of the African native of taking large gruel meals is held to be the responsible factor.

There was one death from peritonitis. Post-operative gastric suction and intravenous salines are regarded as life-saving measures and have changed the prognosis.

Our thanks are due to the Director of Medical Services, Kenya, for permission to publish this paper.

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NOTE BY Sir HENEAGE OGILVIE

During two years of service with the East Africa Force in Kenya, Somalia, and Abyssinia I was responsible for the surgery of an army whose soldiers were mostly Africans—men who lived differently and suffered differently from any patients I had handled before. In learning a whole chapter of surgery that was new to me I was helped beyond measure by the unfailing kindness of the officers of the East African Medical Service; the Director of Medical Services, Dr. Paterson; the Chief Surgeon, Mr. Braimbridge; and the Pathologist, Dr. Vint. Mr. Braimbridge, in particular, instructed me in the methods and guided me through the pitfalls of tropical surgery, and during my spells at General Headquarters, Nairobi, demonstrated his methods and allowed me to help him with operations at the native civil hospital. At that hospital I met the writers of this article—two young surgeons who have the care of a number of beds and perform a weekly operating list that would be the envy of those who practise in London. Their report on volvulus has interest beyond the rarity of the condition in literature and the very creditable number of recoveries they record, for it raises the important question of variations in structure of different races—one as yet hardly touched upon by anatomists or anthropologists.

The African as a patient is cheerful but moody, brave in the face of pain or danger, but terrified of the unknown. He contracts most of the diseases of the European, but to many he reacts differently, and to some, such as peptic ulceration and arterial diseases, he seems to be immune. He has a remarkable resistance to wound infection by pyogenic organisms, and a remarkable ability to repair the effects of trauma. He unites fracture rapidly and seldom suffers from non-union—a complication to which the white settler in Africa seems to be particularly prone. His bodily structure is different from that of the European. Some differences are known—that his skin is more pigmented and richer in sweat glands, that his tibia is longer in proportion to his femur, that his cranial vault is thicker. Others are suggested by his reactions to trauma; for instance, the extreme rarity of injuries to the menisci of the knee, though every kind of osseous fracture and ligamentous tear is encountered, suggests some structural differences. Others again, particularly those of the abdominal viscera, are commonly observed but not recorded. South African anatomists have told me that the African small intestine is usually several feet longer than that of the European, and Vint also believes

this to be the case. The appendix is longer, the stomach larger but not otherwise different. The mesentery is either longer or more extensile, for at laparotomy or necropsy the intestines can be lifted more easily to the surface for examination or manipulation. Anomalies of intestinal rotation and fixation are much more common, particularly the persistence of unfixed mesenteries. It is possible that it is in this greater mobility of the alimentary canal rather than in his dietary habits that the reason for the proneness of the African to volvulus is to be found.

Medical Memoranda

Leukaemic Infiltration of the Site of Herpes Zoster

Leukaemic infiltration of the site of the vesicles of herpes zoster is rare enough to justify the following case record.

CASE REPORT

A ship's engineer aged 52 had had no serious illness until August, 1945, when he developed a typical attack of herpes zoster, affecting the tenth dorsal segment on the left side. On admission to hospital it was noted that he had enlargement of the spleen and of the lymphatic glands in the neck and axillae. A blood count confirmed the diagnosis of chronic lymphatic leukaemia. His herpes subsided, but raised thickenings were left on the skin, and biopsy of one of

them demonstrated leukaemic infiltration. Two months later he was invalided to the United Kingdom and admitted to Ronkswood Hospital, Worcester.

On examination his general nutrition was good. The mucous membranes were pale, and large discrete glands of soft consistency were present in the anterior and posterior triangles of the neck, both axillae, and the inguinal regions, the spleen being enlarged to four fingerbreadths below the costal margin. In the distribution of the left tenth dorsal segment the herpes zoster was seen. All the vesicles had healed, but their sites were marked by raised thickenings in the skin of a coppery colour. These are shown in the accompanying photograph. Blood investigations revealed: Hb, 78%; red cells, 3,680,000 per c.mm.; C.I., 1.05; leucocytes, 138,700 per c.mm. (lymphocytes 68%, lymphoblasts 27%, neutrophils 4%, monocytes 1%).

I am indebted to Sir Walter Haward, Director-General of Medical Services, Ministry of Pensions, for permission to publish this case.

Worcester C. H. CATLIN, M.D., M.R.C.P.

Reviews

A CHARTER FOR HEALTH

A Charter for Health. By a Committee of the British Medical Association. (Pp. 95; illustrated. 6s.) London: George Allen and Unwin.

This little book has been written by members of a committee of the British Medical Association under the chairmanship of Sir John Boyd Orr. Its purpose is to give to a more intelligent section of the public, especially those interested in social and current political problems, an outline of a representative medical view on promoting better physical and mental health in the people of this country. The basic concept of the writers seems to be that the health of the community is, and will be, just as good as the present standards of living and education will allow.

The approach is not to the prevention of specific sickness, and diseases are seldom mentioned except as illustrative examples; rather the object has been to stress the need for raising the whole economic and social level and improving the physical and mental background of the entire population to a level at which the vast majority can enjoy to the full their span of years, without serious risk of breakdown, whether physical or mental. Chapter headings such as "The Essentials of Health," "The Role of Medicine," "The Family," "The Home," "Food," "Occupation," and "Recreation" indicate the scope of subjects on which the medical profession's beliefs are expressed. In dealing with all these subjects the writers refer back again and again to the need for the economic stability of the family at a higher level if the growing members are to have a proper background in which to grow up to full and balanced physical and mental stature.

As is inevitable but right the whole emphasis is on the needs of children as opposed to the present generation of adults. Education of girls for their future duties as wives and mothers, education designed to lessen the difficulties of personal relationships, and education towards assuming a great responsibility in the community are all stressed. The need for a wiser planning of education includes a plea for more recreation without restraint of the child and a lighter burden of lessons and homework for the older child.

Perhaps a little overlapping in subject from chapter to chapter has resulted from the large number of contributors, but this fault emphasizes the very importance of the repetition. A feature of the book is the excellent modern photographs which serve as illustrations. The opinions expressed are authoritative and sound. The text is clear and well written. It is to be hoped that it will reach in large numbers the public for whom it was designed.

A TEXTBOOK OF NEUROLOGY

Clinical Neurology. By Bernard J. Alpers, M.D., Sc.D. (Pp. 797; illustrated. $8.00.) Philadelphia: F. A. Davis Company. 1945.

Dr. Alpers, professor of that subject in Jefferson Medical College, Philadelphia, has given us an admirable new textbook of neurology. A fairly large book, it is unusual among texts of this sort, for it is both pleasant to read and accurately informative. It is pleasant to read because the author presents his material in a systematic manner, it is well written, there are plenty of good illustrations and diagrams, and the general production is excellent. The first two hundred pages deal with the basis of neurology, and there are chapters with headings such as "The Interpretation of Neurological Symptoms and Signs," "The Topical Diagnosis of Nervous Disease," and "Headache, Vertigo, Coma and Pain," which precede more orthodox chapters in which related groups of diseases are described. Dr. Alpers has used the didactic medium, avoiding references and bibliographies, and he has managed to give a general presentation without that rigidity of description which is found in the smaller texts. In one place he says, for example, "All forms of meningitis have features in common, an understanding of which is helpful in treatment and prognosis," and then he goes on to discuss those features before describing the individual diseases. His book cannot well be used for reference, and it is large by the standard of student textbooks in this country, but it is so pleasant to read that most clinical workers who come into contact with neurological problems will enjoy it and benefit by it.

OPERATIVE ORTHOPAEDICS

Anatomical Atlas of Orthopaedic Operations. By L. S. Michaelis, M.D. (Pp. 67; 73 illustrations. 25s.) London: William Heinemann Medical Books Ltd. 1946.

As an example of post-war medical book production the publishers are to be commended, but we doubt the wisdom of producing, however well it has been done, a sketchy outline of operative orthopaedics much of which is based upon the published writings of well-known authorities. Furthermore, there is a deficiency in matters which are of much greater importance than descriptions of operative procedures. What the young surgeon needs to know is when to do a certain operation and what the results of the various methods have been in the hands of a surgical master. In orthopaedics this has already been well done by Steindler, and we await the same approach by a British master.

Dr. Michaelis betrays parochialism when he states that lumbo-sacral laminectomy for a prolapsed intervertebral disk is becoming the most frequent occasion for orthopaedic surgery of the spine. This may be so in his own hospital, but is not at present universal. The present phase—one might almost say "craze"—for such operative intervention has yet to be proved right. In illustrating the procedure for this operation the author has been betrayed by his illustrator into accepting a very obscure picture (Fig. 55) which is out of proportion. A novel method of illustration is employed throughout and it is good. The absence of labelling anatomical structures gives a better sense of reality, but occasionally it is confusing when the text does not explain; as, for example, in one of the illustrations of an approach to the elbow-joint. Arteries are sometimes red and sometimes purple—which is difficult. It is about time that surgical writers ceased to pander to the conservatives who refuse to recognize an anatomical nomenclature upon which medical men have been educated for at least thirty years. The author should not have accepted Fig. 30, which shows the lower portion of the Smith-Petersen incision for the hip-joint tailing off downward and backward towards the ischial tuberosity, nor would a good teacher have omitted to mention the important landmark to the hip-joint provided by the tendon of the rectus femoris and of its reflected portion. Proof-reading could have been better. Phraseology is sometimes involved. Langdale and Kelham are one person. Brigadier Bristow is of course well enough known not to worry about the correct placing of his initials.

In spite of what the author says, no book can provide "a set of tools." It may provide a guide; but the best guide in operative technique for the would-be orthopaedic surgeon is personal instruction by a master. This book could, with suitable modifications, provide a valuable companion for the apprentice.

THE SULPHONAMIDES IN OTO-RHINO-LARYNGOLOGY

Les Sulfamides en Oto-Rhino-Laryngologie. By J. Terracol. (Pp. 184. 140 francs.) Paris: Masson et Cie. 1945.

Prof. Terracol has devoted a whole book of 184 pages to the sulphanilamides and the related chemical compounds. About one-third is given to a general description of their chemistry and clinical application, and the remaining two-thirds to their use in oto-rhino-laryngology. It is not surprising that in the latter two-thirds this has involved the author in much repetition and the quotation of many repetitive papers and case reports, which sometimes obscures the main issue. His real thesis is to be found in the two short chapters in the general section in which he insists on the responsibility involved in prescribing and using these drugs, the need to observe strict standards of dosage, and not to ask of chemotherapy what it cannot perform. The author shows clearly how much harm can be done, particularly in otology, by careless prescribing, inadequate dosage, and lack of clinical supervision during administration. The preparations used in France are apparently more varied and numerous than those now employed in Great Britain, and rubiazol still holds its place in France. Little is now heard of it here, though its great value in the early days of this form of chemotherapy is not forgotten. It is clear that most of the book was composed before France was freed from the German occupation, though the author had the advantage of studying the nature and uses of these drugs in the relatively unmolested University of Montpellier. His study has been thorough and exhaustive so far as it goes, and is a valuable guide to the subject, but it is unlikely to exercise any permanent influence, because the subject itself is constantly changing and also because the word penicillin is not to be found in the book.

ON STAVING OFF OLD AGE

Medical Aspects of Growing Old. By A. T. Todd, M.B., M.R.C.P. (Pp. 164. 15s.) Bristol: John Wright and Sons. 1946.

Dr. Todd has long been known as a physician with original ideas. In this book he rightly stresses the importance of postponing the effects of advancing years for as long as possible in a population which is including a greater and greater proportion of elderly people. No one will dispute with him the fact that the prolongation of health and vigour of mind and body into old age depends on the right use of the body and on the disciplining of habits in youth and middle life. The essentials for this purpose consist, in the view of the author, in attention to diet so as to preserve the efficiency of the liver, the assurance of proper oxygenation of the blood and effective return of blood from the capillaries to the heart by breathing and other exercises. The author believes that fats are of no metabolic value in the dietary, though they may be of some benefit as appetizers. He allows butter but eschews milk and cheese. In his view circulatory disturbances are as much or more due to malfunction in the structures concerned with the return journey of blood to the heart, and he points out that clinical emphasis has been concentrated on diseases of the heart and arteries—i.e., on the efferent half of the circulation—but that our knowledge of the afferent half is all too imperfect. He lays stress on nasal sepsis as a cause of pulmonary disease, which he thinks is often mistaken for phthisis, to the great detriment of the patient and the overfilling of our sanatoria. There are sensible chapters on the care of the skin, scalp, and feet, and an interesting discussion on enlargement of the prostate and on chronic vulvitis in old women which he holds responsible for pyelocystitis and partial incontinence.

Dr. Todd is scornful of many traditional opinions and practices, including a great many surgical procedures which he regards, probably rightly, as manifestations of ignorance and failure on the part of the physician. The equating of progeria and Simmonds's disease and of angina pectoris and effort syndrome may astonish many readers, but the book is interesting and stimulating. It is written in non-technical language to allow the layman to read it, and at least it gives concrete practical suggestions which will be of great use to many patients.

Notes on Books

The sulphonamides and penicillin account for more than a third, and drugs used in the treatment of infections account for more than a half, of the abstracts in the 1945 *Year Book of General Therapeutics*. The new weapons against sepsis, venereal disease, and malaria have been of outstanding value during the war, but our armoury is less well stocked to deal with the tasks of peace. We still await an effective oral or delayed-action penicillin which will allow it to be used in the home, and the early promise of streptomycin in tuberculosis appears to have clouded over. Thiouracil is the outstanding triumph in psychosomatic medicine. For rheumatism and dyspepsia, the failing heart and the afflicted mind, there is nothing new to report. The pharmacologists continue their intense preoccupation with drugs affecting the autonomic nervous system, and benadryl, a new antihistamine substance, is of considerable scientific and therapeutic interest. In many ways, then, this yearbook is like a wartime communiqué: the successes are reported, the defeats and losses are left in silence. That is not the fault of the editors, who can only report the year's advances, and this they have done with their usual skill and concision. This yearbook is undoubtedly the handiest account of current progress in therapeutics. It is published in this country by H. K. Lewis and Co. at 18s.

No. 23 of *Proceedings of the University of Otago Medical School* is edited by Prof. J. B. DAWSON and published in Dunedin. It comprises ten papers on a variety of subjects, all with one exception reprinted from the *New Zealand Medical Journal*. There are two papers on hydatid disease by Sir Louis Barnett and two nutrition papers—one on New Zealand dietary studies, and the other on haemoglobin levels of a group of school-children in Dunedin.

BRITISH MEDICAL JOURNAL

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THE PLACEMENT OF THE DISABLED

We welcome the appearance of a new journal entitled *Occupational Medicine*, published by the American Medical Association and peacetime successor to *War Medicine*. In the first article in the first issue Harvey and Luongo[1] make a useful contribution to the subject of physical capacity in work, of enhanced importance in England now the Disabled Persons (Employment) Act, 1944, has been passed. Harvey and Luongo stress the fact that the satisfactory placement of the disabled is only part of a much bigger problem—that of assessing the physical and mental capacities of candidates for all jobs. The future of industrial medicine is bound up with its success in aiding managements to select employees for specific types of work, in promoting physical and mental hygiene, and in giving nutritional guidance. Successful placement requires an estimate of physical capacity and an analysis of physical requirements for the job; capacity has to be matched with the job. A characteristic of human beings is their variability, both in health and in disease, and much damage can be inflicted on either the disabled or able-bodied from poor selection and placement—damage which is not physical but psychological.

Of disabled persons approximately 25% have surgical disabilities, 25% neurotic, and 50% medical disabilities; the last 75% are the most difficult to place in industry, because it is more difficult to explain their limitations to the management. The Disabled Persons (Employment) Act, 1944, is a well-conceived idea, and its objects must be attained; but, as Agate[2] pointed out from first-hand experience, the present working of the Act gives cause for alarm. For many years the larger firms in this country have had good medical and social services which have resulted in the satisfactory placement of disabled persons. If an employee of these firms attends a hospital and is found to have some disablement, it is easy to employ him satisfactorily. But the bulk of industry consists of small firms not large enough to provide these services or sufficient variety of jobs for those variously disabled. To overcome this difficulty the Ministry of Labour has appointed to local Labour Exchanges Disablement Rehabilitation Officers, with the Civil Service rank of third-grade officers. These officers could not be expected to understand the complicated problems they are called upon to solve; they are allowed little responsibility, and a family man who may have had a long illness cannot afford to wait until a low-geared Civil Service machine has found him a job. He therefore has to find employment for himself which is often unsuitable. It is rare for the Ministry to follow his subsequent history. Agate quotes figures from a heart clinic where some 300 cases were followed up over a period of eighteen months; despite the energetic efforts of physicians and almoners only two-fifths were satisfactorily placed, and most of these were employees of big firms. The proportion adequately placed by Disablement Rehabilitation Officers was under 10%.

Another aspect of the Act needs consideration. The Ministry of Labour has power to direct labour to a firm which employs less than 2% of disabled persons: is the Ministry less concerned with directing labour than with finding work for the disabled? The Act defines a disabled person as one who is substantially handicapped in his work. When it comes to registration both doctors and Ministry officials tend to suggest that a disabled man who has been working in a suitable job for many years as the result either of the good medical services of his firm or of his own initiative is not disabled within the meaning of the Act. Obviously this position is untenable. Nobody would deny that a pilot who has lost both legs yet flies an aeroplane with skill is disabled; so why should it be argued that a man with mitral stenosis who has been found a suitable job in the foreman's office is not disabled? If the purpose of the Act is to be achieved the Ministry of Labour and their local Employment Exchanges will have to work closely with, and act on the advice given by, doctors and the social service department in hospitals. The idea that the work of the Ministry of Labour is confidential while that of the hospital is not must be given up: both are highly confidential to the outside world, but they must share their secrets when both parties are working towards the same end.

Harvey and Luongo analysed 5,100 different jobs in the Federal service and assessed their suitability for several groups of disabled persons: 1,323 were found suited to persons with amputation of the thigh, 1,464 for those with foot amputations, while only 50 were suitable for those with amputation of both legs. It was found that the frequency and severity of accidents were lower than those in an able-bodied group of similar age, experience, and occupational characteristics. But this was not the case in those with congenital and orthopaedic deformities of the upper limbs, though the jobs suitable for them were found to number 834. Apart from deformities of the hip, those with deformities of the lower limbs had the same accident incidence as the able-bodied. Suitable jobs for those with deformities of the leg numbered 1,373, of the foot 1,471, though only 46 were satisfactory for those with deformities of both feet. Two groups of medical patients were studied—those with heart diseases and those with pulmonary tuberculosis. It is recommended that the former should avoid occupations involving sudden spurts with unduly slack intervals of rest; they should have regular hours and favourable conditions of work, and avoid extremes of air pressure and temperature. The patient's capacity for economizing his energy should be considered, and a heavy strain on the lower limbs is more

[1] *Occupational Medicine*, 1945, **1**, 1.
[2] *Proc. roy. Soc. Med.*, 1946, **39**, 163.

easily tolerated than on the upper. No one liable to vertigo, syncope, or "sudden death" should climb ladders, or work near dangerous machinery or at high altitudes. Dusts induce cough and bronchial congestion, and should be avoided by those with mitral disease; any environment likely to favour infection of the upper respiratory tract should be avoided, as should any occupation likely to cause anxiety or emotional disturbance. 1,268 jobs were found suitable for persons with heart disease; their efficiency and productivity compared favourably with those of normal persons; accident rates were slightly more frequent, but less severe. The person with pulmonary tuberculosis, it is advised, should have a job which does not overtax his working capacity, and conditions which might reactivate the disease or expose other employees to danger should be avoided. Obvious conclusions, perhaps, but they need to be stated. 1,328 jobs were found to be suitable for the tuberculous. These were as efficient as the able-bodied, and their safety record was good; but their rate of absenteeism for sickness was high.

A group of patients with disabilities of sensation were also investigated: 1,269 jobs were found for deaf workers in which they could put up a performance as good as that of the able-bodied, but in some instances the accident rate was higher than that of persons with normal hearing. For those hard of hearing 2,179 jobs were found in which the results of work compared favourably with those attained by the able-bodied; again psychological problems in some cases increased the accident rate. Satisfactory jobs—2,080—were found for those blind in one eye; their performance was good but the accident rate high—believed to be due to fatigue. Such persons must be given jobs which do not endanger others, and care must be taken to protect the remaining eye. Fifty-five suitable jobs were found for the totally blind, and they did as well in them as normal persons.

As Agate has pointed out, medical cases can best be placed by a team of doctors and almoners working together and advising officers of the local Labour Exchanges; but this requires much time, and it will be some time yet before enough trained staff will be available. The alternative is a comprehensive job analysis for all occupations, similar to that carried out by Harvey and Luongo. The Ministry of Labour seems to be relying on the spasmodic efforts of individual firms. This is to be regretted, since it will hold up progress.

FOOD YEAST

The animals that supply us with food do not add directly to the world's supply of food: they only concentrate certain nutrients in an appetizing form. They burn the greater part of the complex compounds built up by the plants they eat, and they excrete the nitrogen of the proteins. This nitrogen may be lost; at best, it must be reincorporated in protein by plants before it can again be used by animals. In return the animals provide a small amount of food which is more appetizing and less bulky than much of the feeding-stuffs, and contains relatively large proportions of the indispensable amino-acids, of vitamins of the B group, and, in the case of milk, calcium and vitamins A and D. From the point of view of the health of the soil or of mankind the transaction is profitable in the long run. But on a short run and for people living on the margin of subsistence it is wasteful. What they need is some process that will supply the values of meat and milk without waste of calories and loss of nitrogen. Yeasts have virtues not shared by farm animals: they do not use up calories in uneconomic activities; they can make proteins and vitamins out of simple ammonium salts and carbohydrates; they actually add to the supply of protein and vitamins. Brewer's yeast is too bitter to be used, on any scale, as a foodstuff; but *Torulopsis utilis*, which has been studied by Dr. A. C. Thaysen and his colleagues in the Chemical Research Laboratories of the Department of Scientific and Industrial Research, yields a product of delicate flavour which can be eaten alone or added to other foodstuffs. This yeast is fed on molasses and ammonium salts, and returns about 60% of the carbohydrate and almost all the nitrogen in the form of protein. The dried product "food yeast" contains, per 100 g., 43 g. of protein, 2 mg. (or 670 i.u.) of vitamin B_1, 5 mg. of riboflavin, 40 to 45 mg. of nicotinic acid, and 4 to 8 mg. of pyridoxine. The amount recommended for human consumption is 1/4 oz. (7 g.) per day. In some cases this amount, when all was given at one meal, has appeared to cause digestive disturbances, but one person ate 64 g. daily for 4 days without ill effects. The amounts of the chief nutrients of the 7 g. of food yeast may be compared with those of one-third of a pint (190 ml.) of milk and with our present approximate daily consumption.

	Protein (g.)	Vitamin B_1 (mg.)	Riboflavin (mg.)	Nicotinic Acid (mg.)
Food yeast, 7 g. ..	3	0·14	0·35	3
Milk, 1/3 pint	6	0·075	0·28	0·21
Approx. average daily consumption	70 (animal, 33)	1·4	1·5	13

The chief contributions of food yeast are, therefore, riboflavin and nicotinic acid. In experiments on animals the biological values of the protein used as a supplement to a cereal diet proved about equal to that of casein; alone, it proved inadequate owing to its low content of methionine.[1] Its value as a source of the B vitamins was shown in an experiment[2] on rats, in which over 80% of the diet was supplied by flour, with a salt mixture, vitamins A and D, and casein to supply an optimum amount of protein. Group A were given ground whole wheat, and Groups B, C, and D white flour of 75% extraction with 5%, 2.5%, and 1.25% of food yeast. These flours would contain (in mg. per 100 g.):

	Vitamin B_1	Riboflavin	Nicotinic Acid	Pyridoxine
Wholemeal	0·33	0·23	4·4	0·33
White + 5% yeast ..	0·205	0·335	2·8	0·52
,, + 2·5% ,, ..	0·155	0·210	1·8	0·35
,, + 1·25% ,, ..	0·130	0·14	1·3	0·27

Group B grew faster, Group C slightly faster, and Group D less fast than Group A.

[1] Klose, A. A., and Tevold, M. L., *Proc. Soc. exp. Biol.*, N.Y., 1944, **56**, 98.
[2] *Food Yeast: A Survey of its Nutritional Value.* Accessory Food Factors Committee, Medical Research Council. H.M. Stationery Office, 1945.

Biscuits containing 8 g. of food yeast were given to children in rural schools[2]; their weights increased faster than those of children who were given biscuits without yeast, but there was no significant difference between the rates of growth in height. More details than are given in the report are needed before the full significance of these experiments can be assessed. Food yeast has been used in treatment of vitamin B deficiencies. Subjects who were given 7 or 5 g. daily improved or were cured in the course of five or seven weeks, while little change was seen among the controls.

Manufacture of food yeast from molasses and ammonium salts has been started in the West Indies; the yearly output anticipated is of the order of 2,500 tons,[3] which would provide 1,000,000 people 1/4 oz. (7 g.) a day for a year. How could this supply be best used? Peoples in Africa, who formerly depended on yeasts in fermented drinks for their supply of B vitamins, suffer from deficiency diseases since they have changed over to more sophisticated food. Food yeast could restore these vitamins, though in a less interesting vehicle. Even the 3 g. of protein would add appreciably to the value of the diets of people who get a large proportion of their calories from cassava. And food yeast could also be used to make up for the deficiencies of polished rice.

Two per cent. of food yeast can be added to white flour without affecting the flavour of bread made from the flour. This suggests a new way of putting back some of the good which is removed in milling white flour. The latest argument in favour of 73% extraction is that hens do not get enough riboflavin if they are not given whole grain; that we cannot have both our pre-war supply of whole eggs and 85% flour. But putting the yeast into debased flour seems a roundabout process. Why not give the hens the food yeast and leave us our 85% flour? A supplement of 5 to 10% to the balancer meal for domestic poultry-keepers is recommended.

Food yeast is not a magic key to the problem of the world's malnutrition. The daily dose recommended supplies only a fraction of some of the nutrients needed, and the amounts that could be made would supply this dose to an even smaller fraction of the people who lack these nutrients. It would not add the calories that are needed to prevent famines, nor increase the fertility of the soil. The long-term solutions are to be found in the wider use of legumes that put nitrogen into the soil, and in the steps proposed by the World Conference on Food and Agriculture—irrigation, prevention or cure of erosion, use of fertilizers, and a gradual change to mixed farming. But food yeast should mitigate some of the present evils and be a useful adjunct in the future. *Torulopsis utilis* is a token of our new position with regard to food and its production—we now know our wants and can state them in figures, which is the first step towards satisfying them. *Torulopsis utilis* var. *major* is a token of our present powers, for this variety, which can be centrifuged down rapidly, owing to its large size, was not found, but was made by treatment with camphor.

[3] *Food Yeast: A Venture in Practical Nutrition.* Colonial Food Yeast, Ltd., 1944.

SALMONELLA INFECTIONS

A year ago[1] we discussed salmonella infections and their distribution in Nature. A recent paper by Hayes and Freeman[2] shows the types of salmonella met with in the Army in India. With the exclusion of *Bact. typhosum* from consideration, 548 strains were sent to the Central Military Pathological Laboratory over a period of four years. They were: *Bact. paratyphosum* A 281, *Bact. paratyphosum* B 7, *Bact. paratyphosum* C 110, *Bact. enteritidis* 111, *Bact. enteritidis* var. *dublin* 14, *Bact. typhimurium* 18, miscellaneous 7. The infrequent occurrence of *Bact. paratyphosum* B is remarkable. It is a rather rare salmonella in India, though in Great Britain it has become in recent years the most frequently identified salmonella type.

Infection with *Bact. paratyphosum* A does not reveal any "marked aggregate variation" which cannot be accounted for by the increase in the size of the Army in India over the four-year period. But *Bact. paratyphosum* C and *Bact. enteritidis* infections showed a significant rise. The *Bact. paratyphosum* C strains all contained the Vi antigen of *Bact. typhosum*; in 1944 only seven were isolated from Europeans, the remainder being from Indian patients. Increased infection with this strain may be due to the wartime movements of various people. This strain is not uncommon among the Chinese. *Bact. enteritidis* was isolated direct from the blood of infected persons in 87.5% of cases, and from the faeces in only 4%. Definite septicaemic invasion could be postulated for nearly all these cases, and not the ordinary clinical type with gastro-intestinal symptoms without blood invasion. This gastro-intestinal type used to be the prevailing, indeed almost the invariable, form in Great Britain up to fifteen or twenty years ago, but over the past few years there have been reports of many cases of salmonella infections resulting in a septicaemia with a high mortality. Usually they appear not in outbreaks but as isolated cases, with no indication as to the source of the infection and without demonstrable relation to other cases. In Hayes and Freeman's series practically all the strains are from cases of septicaemic type. Unfortunately the clinical and epidemiological details of the cases from which the strains were derived were not available to the laboratory. No facts are given to show if most of them were single cases or cases from limited outbreaks, or if any or many of them were associated with outbreaks of ordinary food-poisoning. As might be anticipated from the high proportion of septicaemic cases, the mortality was high (5 to 10%), compared with 1 to 2% for the food-poisoning clinical type.

We know that the septicaemic type of infection with salmonella strains appears to be on the increase in this country, and this increase seems to be even more marked in India. There is some not very clear-cut evidence that persistent high temperatures may affect invasive properties, and it would be of interest to study the relative prevalence of salmonellas associated with septicaemia in countries with high average temperatures. Hayes and Freeman put forward some interesting suggestions to account for this increased invasive quality of *Bact. enteritidis*, such as the acquisition by mutation of a "virulence" antigen analogous to the Vi antigen of *Bact. typhosum*, or by the development of a high degree of host adaptation. In this connexion it should be noted that *Bact. typhimurium* was isolated in only 18 cases, and in most of them from the blood. This is the commonest of all salmonellas as regards its distribution and prevalence. *Bact. enteritidis* (*dublin*) was isolated only on 14 occasions, and it would be useful to know how

[1] *British Medical Journal*, 1945, 1, 451.
[2] *Ind. J. med. Res.*, 1945, 33, 177.

many of these cases were associated with cattle or were infected by milk. There is still an urgent need for closer co-ordination between clinical, field, and laboratory findings, so that the relation between specific types, the sources and reservoirs of infection, and the clinical manifestations can be established more clearly.

HABITUATION TO STREPTOMYCIN

We continue to hear about streptomycin from American sources before there has been any opportunity to test its therapeutic powers in our own patients. Some of the latest news is disquieting to those who had hoped that it would fill some of the gaps left by penicillin. One of its drawbacks has been pointed out by E. P. Abraham and E. S. Duthie.[1] Streptomycin is a base, and in a medium on the acid side of neutrality its activity falls steeply. So far there is no clinical counterpart to this laboratory observation, but more direct evidence of a weakness in its potentialities comes from authors who have observed a rapidly increasing resistance in bacteria exposed to its influence. By cultivation on media containing increasing concentrations of streptomycin, C. P. Miller and Marjorie Bohnhoff[2] were able to produce a startling increase in the resistance of gonococci and meningococci, which after only four to six transfers withstood a concentration of 75,000 units per ml.—"the maximum concentration which could conveniently be employed with the supply at our disposal." By the same method they lifted the resistance of a gonococcus to penicillin to nearly 10 units per ml. Although this was a much more laborious process its results must presumably be taken as a warning against the idea that penicillin will necessarily continue indefinitely to cure nearly every case of gonorrhoea.

C. W. Buggs and his colleagues[3] cultivated 212 strains of various species of bacteria from patients before and during treatment with streptomycin. They found not only a wide variation in initial susceptibility in some species but a tendency to the rapid acquisition of resistance. In one patient the concentration of streptomycin inhibiting the growth of a streptococcus responsible for a urinary tract infection was in successive examinations 1, 2, 4, 8, and 256 units. Streptomycin may have to be given in very large doses, ensuring an early lethal effect, if this escape from its influence is not to occur. Possibly because of the high concentration maintained in the bowel, owing to minimal absorption, no such habituation was evident in the studies of Dorothy G. Smith and H. J. Robinson[4] on the effect of oral streptomycin on the intestinal flora of mice. It clearly excelled streptothricin, sulphasuxidine, and sulphaguanidine in suppressing coliforms, and achieved its effect rapidly. Evidently streptomycin may be of value as an intestinal disinfectant before operation on the colon.

THE SPA IN THE FUTURE HEALTH SERVICE

Ten spas were represented at a conference held by the British Spas Federation in Harrogate at which Lord Horder gave an address and was re-elected president. Pointing to some omissions from the National Health Service Bill, Lord Horder noted the Government's silence about utilization of the British health resort and about the large group of patients suffering from rheumatic diseases. Something would be done, he suggested, in proportion to the standard reached by the health resorts. The standard must have at least two desirable features. The first was linkage with groups of people who could investigate and carry on research: there must be liaison between the spa and the teaching centre. Secondly, the lay-out at the spa must be such as to cater for the potential or actual patient, with medical control by doctors who were spa-minded—which meant that the doctors should have expert knowledge of what was possible in the spa where they practised. If these two conditions were properly observed, Lord Horder said, then no Minister would dare to neglect the inclusion of British spas in any scheme which he put forward; and by regulation he could contract out certain aspects of national health. He himself would add to the spa some definite amenity for the patient's private life—amusement, and mental and physical recreation. Prof. J. S. Hartfall, of the School of Medicine, Leeds University, advised the spas to plan regionally without delay. They must not forget industrial rheumatism, he said, nor the need for research and for co-ordination with other spa centres and university centres. It seemed clear to him that the reputation of the spas depended upon the quality and repute of their doctors, together with up-to-date facilities for physiotherapy, including hydrotherapy, and hospital facilities for rehabilitation. If these things, and in particular research, were attended to then spa treatment as an established feature of medical therapy would have a place in the future national health service of this country.

G.M.C. ELECTION

In accordance with the Medical Act, 1886, an election of five members of the General Council of Medical Education and Registration of the United Kingdom to represent the registered medical practitioners resident in England and Wales is about to be held. By the appointed day, May 20, the following had been duly nominated as candidates for election: Louis Francis Beccle, South Woodford, London, E.; John Wardle Bone, Luton, Beds; Albert James Clarke, Kentish Town, London, N.W.; Harry Guy Dain, Selly Oak, Birmingham; William Fraser, Currock, Carlisle; Edward Andrew Gregg, London, N.W.; Leslie William Hefferman, West Cross, Swansea; Sir Ernest Kaye Le Fleming, Wimborne, Dorset; William Macleod, Consett, Co. Durham; James Edgar Outhwaite, Yeadon, Leeds; William Walters Sargant, Sutton, Surrey; Gordon Reginald Ward, Sevenoaks, Kent; Noel Everard Waterfield, Little Bookham, Surrey.

At the Annual Representative Meeting of the British Medical Association held in July last the selection of practitioners who will have the support of the Association in the next election of Direct Representatives for England and Wales to the General Medical Council resulted as follows: Dr. J. W. Bone, Dr. H. Guy Dain, Dr. E. A. Gregg, Sir Kaye Le Fleming, Dr. N. E. Waterfield. Their joint election address is published in our *Supplement* this week at page 154.

We regret to announce the death of Dr. T. H. Bryce, emeritus professor of anatomy in the University of Glasgow.

The sixth annual general and scientific meeting of the Ophthalmological Society of Australia will be held from Oct. 23 to 26, 1946, at Melbourne. The president of the society, Dr. J. Ringland Anderson (108, Collins Street, Melbourne, C.1), states that practitioners from this country who may be able to attend the meeting will be welcome. The organizing secretary is Dr. W. D. Counsell (85, Spring Street, Melbourne, C.1), to whom communications should be addressed. The Secretary of the B.M.A. will be glad if any members contemplating attendance at the meeting will write to him.

[1] *Lancet*, 1946, **1**, 455.
[2] *J. Amer. med. Ass.*, 1946, **130**, 485.
[3] Ibid., 1946, **130**, 64.
[4] *J. Bact.*, 1945, **50**, 613.

REHABILITATION IN SCOTLAND

ADVISORY COMMITTEE'S REPORT

"Rehabilitation of the sick and injured means the process of restoring them in the greatest measure possible to health, working capacity, and social independence. In that sense it includes all medical and surgical treatment, all assistance of whatever kind given to a patient during his incapacity and, where necessary, his specially arranged reinstatement in an appropriate occupation." This is the broad definition of rehabilitation adopted by a subcommittee, under the chairmanship of Prof. E. P. Cathcart, of the Medical Advisory Committee (Scotland), which is presided over by Sir John Fraser.

The recently issued report of this committee[1] stresses that in all cases where recovery or partial recovery may be expected the rehabilitation of the patient is as much a part of medical responsibility as is the primary treatment. A wider and more judicious use of rehabilitation measures would reduce the duration and degree of the incapacity which patients suffer. Surgical and orthopaedic witnesses who gave evidence before the subcommittee were agreed upon the value of the more remedial as distinct from the diversional forms of occupational therapy, particularly for lesions of the upper limbs. A considerable range of occupational activity has been found useful as part of the programme of re-education and reorientation in the particular types of case which are encountered in the more specialized departments of neurology and plastic surgery. An important recent development is illustrated by schemes such as that which is being carried out in Birmingham by the Austin Motor Company in collaboration with the Birmingham Accident Hospital. A workshop has been established in which, under the supervision of the surgeon, injured workmen are given specially selected jobs of work designed to exercise the injured part. Such a scheme has the twofold advantage that it provides a type of occupational therapy which bridges the gap between medical treatment and full return to industry, and by suitably graduated wage scales it gives an incentive to continued progress.

The Gleneagles Experiment

Since 1943 a special experiment has been in progress which provides a residential rehabilitation centre for patients referred from hospitals and, in some cases, directly from general practitioners. The Fitness Centre at Gleneagles was set up at the request of the Ministry of Fuel and Power and the Miners' Welfare Commission, in the first instance for providing rehabilitation for miners, though its scope has since been extended to a wider range of patients. The Gleneagles project has served as a useful experiment in rehabilitation which has attracted much public attention. The actual medical measures used have undoubtedly proved valuable in increasing physical fitness, and have been studied with interest. Notwithstanding the excellence of the work done by Dr. P. J. Macleod and his staff, however, it has to be recognized that the experiment has not been completely successful, in that all that might have been expected in hastening return to work has not been found possible. The reasons for this are partly the inadequate selection of cases for admission; partly the deterrent effect which the prospect of compensation still has; and partly the special difficulties of the mining industry, including the policy (in the subcommittee's view a mistaken one) of segregating miners.

The report goes on to state that "the final stage in rehabilitation is re-employment, and remunerative work is often the best form of rehabilitation." And in this connexion:

"It seems to us that in future doctors as a whole, whether employed in general practice or in hospitals or in clinics, should have a better knowledge of the conditions under which their patients work, and of the broad principles of industrial medicine. The family doctor will still have most of the responsibility of the return of his patients to work. We believe that his problems and anxieties in this connexion would often be lessened if he took an active interest in the industries within his area and obtained first-hand knowledge of the conditions under which his patients work. We feel sure that industry will welcome doctors who seek in this way to enhance their professional competence."

[1] Edinburgh: H.M. Stationery Office. (6d.)

Fundamental Principles

Before considering the nature and extent of the further facilities required the subcommittee lays down three fundamental principles.

"In the first place there must be, so far as is possible, continuity of supervision during the whole process of primary treatment and rehabilitation. In most surgical and orthopaedic cases, rehabilitation must be started within the first few days in hospital, and should be carried on throughout the whole period of sickness and convalescence. At this early stage the patient has to be educated and encouraged to take an active part in promoting his own recovery. Unless there are clinical indications to the contrary, stress should be laid upon active as opposed to passive forms of treatment.

"The second principle is that the planned programme of increasing activity should continue through convalescence to the point at which the patient is considered fit to resume his normal employment. If it becomes clear that he will be unable to do so, the process of rehabilitation should be designed to enable him to undertake training for some other occupation.

"Thirdly, return to work or entry into a course of training should take place when he is judged to be fit for it. In some instances a brief holiday may be advisable, but occasionally the benefit gained from reconditioning may be lost if the patient is allowed to relax for too long a period before return to work. On the other hand, it may be definitely harmful to set patients to work too soon after discharge from hospital or convalescent home. If their general physical tone is below par they have not been sufficiently prepared by a process of hardening to face the stress of ordinary working life."

Finally, the report recommends the establishment of non-residential centres related to the major general hospitals in the large towns. Each region should have one or more hospitals equipped for the rehabilitation of long-term cases. A smaller number of larger, better equipped, and better organized convalescent hospitals is needed. One large residential centre should be created to deal with about 200 patients. The head of this centre, as of rehabilitation units attached to central or county general hospitals, should be a doctor whose whole time is given to the work. The exact qualifications for such a post cannot be precisely laid down, but a wide knowledge of and an active interest in rehabilitation undoubtedly are essential. These may be found in a surgeon or a physician or an orthopaedic specialist who is prepared to devote himself to rehabilitation as a wholetime task. On the other hand, it may often be of advantage to secure the services of one who has specialized in physical medicine.

In conclusion, it is suggested that for the running of a rehabilitation centre four practical rules should be observed. First, there should be a single medical control. Secondly, the physician or surgeon who refers the patient to the rehabilitation unit must have the fullest opportunity to discuss the appropriate course of treatment with the medical officer in charge. Thirdly, the auxiliary staff must work together as a team under the direction of the medical officer. Lastly, the progress of the individual patients should be reviewed and their rehabilitation programmes adjusted at weekly meetings presided over by the medical officer in charge.

ACHIEVEMENTS OF CHEMICAL RESEARCH

The exhibition of chemical research to be held at the Tea Centre, Lower Regent Street (corner of Jermyn Street), London, S.W., will open on June 5. It is designed to show some of the major achievements of chemical research during the war, and to demonstrate their even greater importance in peacetime. The exhibition is divided into five main sections, each based on a great British chemical discovery.

The section "The Chemist versus Disease" is devoted to the part played by chemical research in combating disease and improving sanitation. Particular emphasis is laid on the sulpha drugs, penicillin, and paludrine, and their significance in chemotherapy is explained. Paludrine is shown in relation to the earlier specifics, quinine and mepacrine. "The Chemist and Your Food" outlines the part played by the chemical industry in modern agriculture. Though this section naturally deals with synthetic fertilizers, it is mainly concerned with the evolution of chemical methods for combating moulds, bacteria, and weeds. Chemical warfare against predatory disease-bearing insects has a section to itself, and the new insecticide "gammexane" is described in detail. The section on "The Chemist and Plastics" centres round "perspex" and polythene. The final section is devoted to "ardil," the wool-like protein fibre made from monkey nuts.

The exhibition is organized by I.C.I. and will open daily from 10.30 a.m. to 8 p.m. (Sundays 2 till 7 p.m.) until June 28 inclusive.

Nova et Vetera

HARVEY AND THE BATTLE OF EDGEHILL

William Harvey is said to have been present at the Battle of Edgehill and, according to the legend, the King entrusted his two young sons, the Prince of Wales and the Duke of York, to the care of that eminent physician. The originator of this yarn was John Aubrey, gossip writer and a charming man, who had only one enemy—himself. He was unreliable, as gossip-mongers have been throughout the ages. The tale originated by Aubrey runs as follows[1]:

"When Charles I by reason of the tumults left London, he [Harvey] attended him and was at the fight of Edgehill with him; and during the fight the Prince and Duke of York were committed to his care: he told me that he withdrew with them under a hedge and took out of his pocket a book and read; but he had not read very long before a bullet of a great gun grazed on the ground near him, which made him remove his station."

This anecdote, which has not a shred of evidence to support it, has been repeated by many of Harvey's biographers, and some of them have even elaborated on it. One says that the book he was reading was Fabricius[2]; another states that Harvey was nearly hit by the cannon-ball; while a third has it that the doctor and the boys had been for a walk and were tired of waiting for the battle to begin, so they sat down in a ditch to pass the time.[3] An artist, W. F. Yeames, has depicted the incident in an oil painting, which was reproduced in Ogle's Harveian Oration of 1880. This pictures to us the battle in progress in the middle distance. The young princes are crawling up the bank to get as good a view of the fight as possible. The great man himself is seated on the trunk of a fallen tree at the bottom of the ditch, entirely engrossed in the book which he is reading, and he has a second book on his knee. Artistic licence is pardonable in a painter, but is inexcusable in an author such as Eliot Warburton, who is claiming to write history. In his *Memoirs of Prince Rupert* (Vol. 2, p. 17) he writes:

"Whether he [Harvey] was absorbed in the contemplation of his favourite subject [the circulation of the blood], under favourable circumstances or not, is uncertain, but he lay upon the hill side, apparently unconscious of the roar of battle from beneath and of bullets plunging into the turf all round him, until he was fairly carried off the field by someone who cared more for him than he did for himself."

All very dramatic, but there is not a word of truth in the whole story. If Aubrey's story had stood alone, it would have had to be accepted for want of any other evidence. Fortunately, evidence is available which shows that the young princes were very differently employed that day. First of all, there is the statement of an anonymous writer who, there can be little doubt, was present at the battle, that the cannonade at the start of the fight did little damage, but that a number of cannon-balls fell near to where the King and his children were located,[4] and this was certainly not in a ditch at some distance from the battle. The story is carried forward by no less a person than the Duke of York himself. He informs us[5] that the King did not wish to expose his brother and himself to these dangers, and asked first the Duke of Richmond and then the Earl of Dorset to take the boys away from the battlefield. Both these noblemen asked to be excused, as they felt it would be cowardly for them to withdraw while the action was in progress. The King finally gave a direct order to Sir William Howard to remove the children. As they were retiring they were nearly captured by a party of Parliamentary horse, which had come round the left flank of the Royalist infantry. Fortunately, a dressing station had been opened in a barn in this area and a number of Royalist wounded were congregated around it. The enemy cavalry, mistaking these men for a formed body of troops, retired, which gave the princes their chance to escape.

Here are two independent accounts of what happened to the King's sons upon that memorable day; both accounts are in agreement with each other and completely contradict Aubrey's romantic little story.

Sir John Hinton's Account

There is still a further witness, Dr. Hinton, later Sir John Hinton and physician to Charles II. This distinguished doctor had cause to petition His Majesty after the Restoration. In the course of this document Hinton recalls his services at Edgehill, where he appears to have been employed in the intelligence branch of the army and not in the medical one, as might have been expected. He says[6]:

"Your Majesty [Charles II] was unhappily left behind in a large field, at which time I had the honour to attend upon your person, and seeing the sudden and quick march of the enemy towards you, I did with all earnestness most humbly, but at the last somewhat rudely, importune your Highness to avoid the present apparent danger of being killed or taken prisoner, for their horse was by this time come up within half musket-shot in a full body; at which your Highness was pleased to tell me you feared them not and drawing a pistol out of one of your holsters and spanning it, resolved to charge them, but I did prevail with your Highness to quit the place and ride from them in some haste; but one of their troopers being excellently mounted, broke his rank and coming full career towards your Highness, I received his charge and having spent a pistol or two upon each other, I dismounted him in the closing but [he] being armed cap-a-pie, I could do no execution on him with my sword, at which instant Mr. Mathews, a gentleman pensioner, rides in and with a pole-axe immediately decides the business and then overtaking your Highness, you got safe to the royal army."

This extract has been given at length because, if true, it completely demolishes the legend of Harvey acting as the guardian of the princes at the Battle of Edgehill. There appears to be no reason why Hinton's account should not be accepted. It corresponds with the one given by one of the principal actors, the Duke of York. Both agree that the incident took place on the left wing of the Royalist army, that the Prince of Wales ran a grave risk of being cut off by the enemy's horse, and that he was saved only by the fact that they did not charge as a formed body.

Further, dare Hinton have invented such a story? Surely he would not have taken the risk of being exposed as a vulgar liar by his royal master. True, the event had taken place years before, when Charles was only thirteen and his brother James nine. But every incident of his first battle must have been firmly imprinted on his mind. Also, the story can hardly have been invented to flatter Charles II, since it shows him acting rather foolishly and being told so by an older and more experienced man.

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George Owen: Physician to Henry VIII

M. E. P. writes: The account of Dr. George Owen by R. R. J., published on March 23 (p. 436), is interesting. R. R. J. quotes Owen's will (1558), and calls attention to the fact that the testator bequeathed to his sonne William "Godde's blessing and myne." Such an expression occurs in the will (1423) of Robert Hylle of Spaxton, who made a similar bequest to his daughter Elizabeth. Owen's legacy in the time of Philip and Mary to Wolvercot Church would be, I think, for prayers to be sung at intervals for his soul. R. R. J. also refers to Dr. Buttes (ob. 1545), who was after the Reformation the first, I believe, to give the title of "nurse" to one who ministers to the sick.

Henry Schuman, of 20, East 70th Street, New York, announces the founding of a new quarterly periodical, *Journal of the History of Medicine and Allied Sciences*, under the editorship of Dr. George Rosen: annual subscription $7.50 in the United States, Canada, and Latin America; $8.50 elsewhere. The first number bears the date January, 1946.

Correspondence

The Health Service Bill

SIR,—Most doctors will share Mr. Attlee's recently expressed conviction that "advance comes through co-operation," but we are certainly put in a difficult position by Mr. Bevan's idea of co-operation, which seems to be to antagonize doctors, local authorities, and voluntary hospitals, as well as a very large section of the public. It is further complicated by the circumstance that his "conciliatory" speech bore little relation to the actual Bill or to reason and facts. I quote only one example. Speaking about Health Centres he said: "It has been described in some places as an experimental idea, but we want it to be more than that." Now a thing which does not yet exist must remain an idea until it does, and anything which has not been thoroughly tried out must remain an experiment until it has. All Mr. Bevan's fluency and rhetoric cannot alter these elementary facts or justify his conclusion that "to the extent that general practitioners can operate through health centres in their own practice, to that extent will be raised the general standard of the medical profession as a whole." A Minister who does not distinguish between verbiage and reasoning, or between hypothesis and fact, can make little appeal to those who have been taught the elements of science and the pursuit of truth, so it is only to be expected that the recent Special Representative Meeting should view many of his proposals with disfavour.

A head-on collision between the Minister and doctors and hospital authorities would, however, be a disaster for the patient whom both parties exist to serve. Some basis of co-operation must be found, and as a contribution to this end I put forward the following suggestions, which doctors and hospitals might accept and which the public conscience might approve more than the wholesale appeal to force contained in the Bill, for an appeal to force is itself a confession of failure to understand or of inability to convince.

During the dislocation of war we have come to realize that there must be some sort of regional planning of the hospital service, but there has been no opportunity for hospitals to reorientate themselves to this idea, and it must be from seven to ten years before buildings can be provided and the needed personnel trained. It would surely be wiser that instead of creating the chaos and resentment inevitable in the Minister's plan to take over all these institutions, as the Bill proposes, this power should be held in reserve and exercised only after 4 or 5 years in cases where a hospital has failed to fit into the scheme or to equip itself properly with any aid the State may afford. This would bring all the governing authorities into active co-operation in the development and working out of plans. Where interest in the hospital is strong, local support would be stimulated and the hospital would retain its own identity within the ambit of the scheme. Where, however, there was no great local support and the hospital was unable to attain the necessary standard the governors would probably be glad to hand over their institution and all the assets of which they are trustees to the Minister. This would avoid the very dangerous precedent of confiscation which the Bill creates, however much we may wish to shut our eyes to it. It would then only be in the very few cases of inefficiency and deliberate antagonism where powers of compulsory acquisition would have to be used. In this way new hospital facilities would be first provided in the neediest areas, as they ought to be. Advance would come through co-operation, but planning could proceed just as surely as if the hospitals had, in fact, been taken over, and in this more gradual process probably even better plans would emerge.

As regards the doctors, an enormous improvement could be made at once in the scope of their service and in freedom from doctors' bills. School-children, dependants of those at present insured, the old-age pensioners, and public assistance patients, etc., could be catered for immediately on the lines of the National Health Insurance, provided a proper capitation fee was paid. Suitable insurance schemes preserving the right to opt out could be devised for the higher income groups if they wished to use them. Increased mileage allowances would stimulate more doctors to go to the rural areas, while something like the "floating sixpence" might be used to attract doctors to the less attractive or "under-doctored" localities. Provision could be made for doctors who desired to be full-time medical servants to become so, just as some hospitals might come under the direct control of the Minister, but the essence of the service would be flexibility rather than uniformity, and as more facilities became available they would be made free to all. The service would be a growth instead of an administrative machine. It would elicit the hearty support of all concerned, would cater for the infinitely varied needs of a civilized society, and embody two essentials of health—freedom to choose and freedom for development. Dissatisfied authorities and disgruntled doctors are a poor basis for any health service, however nice it looks on paper, and coercion can never take the place of co-operation in getting a job done well. The patient should not be sacrificed to avoid difficulties in administration.—I am, etc.,

Winsford. W. N. LEAK.

SIR,—The history and present position of politics as related to the medical profession can be outlined as follows. Some years ago our major national policy makers decided on a comprehensive, centrally controlled, and ultimately totalitarian medical service, with the object of increasing their already great power and as an important step towards the completely planned (totalitarian) State. By means of their established control over national finance they obstructed the normal development by organic growth of our traditional medical system, hoping thereby (and it must be admitted not without success) to bring it into disrepute and so prepare the way for what these planners had in mind. It is noteworthy in this connexion that Mr. Aneurin Bevan has put forth his scheme as an attempt to solve financial difficulties experienced by those concerned with medical development and by the public in gaining access to existing services.

The present strength of these aspirants to powers verging on the absolute can be judged from the fact that all the political parties obediently acted in support of the policy which they had laid down. The Labour Party appears to be the more willing tool, but in actual fact there is no essential difference between the policies of the present Government and the last. Under these circumstances it is not to be wondered at that the executive of the B.M.A. yielded to the strong and continuous pressure from outside rather than to the weak and fitful pressure exerted by its own members. (From time to time the "high-ups" of the B.M.A. expressed admiration for the work of P E P—the most powerful planning and policy-forming organization in the country.)

Thus the stage was set for the dishonourable sham fight which has distinguished medical politics throughout the war period and since. In this "fight" the B.M.A. executive and the "representatives" of the profession play the part of combatant, referee, or negotiator as required. The most extraordinary role was that of the now-played-out negotiator. When the suggestion to negotiate with the Minister of Health was first made one or two small voices were raised in protest against it. Had those voices been listened to the profession might have been saved the humiliation which Mr. Bevan has poured upon it in full measure. Negotiations indeed. Was the profession up for sale? One had hoped not. In any case its fate had been decided whatever the method of execution subsequently agreed upon. Could anything more nauseating be imagined than to have to accept our "enemy No. 1" in the previous House of Commons as our "great protagonist" in the present House? Is it in support of this sorry scheme of things that members of the B.M.A. are being urged to achieve unity—such unity as inspired the Gadarene swine to rush down a steep place and perish miserably in the waters below?

There can be no doubt that the Bill will go through Parliament substantially as it stands and be placed on the Statute Book. Whether it will ever be put into operation is another matter. That depends on how the doctors act. It cannot be born without our help. Sooner or later we must face the question, Are we going to give that help or not? When threatened with compulsion (as we are), since compulsion cannot change the will, lovers of freedom unwilling to co-operate can do no other than defend their freedom with all their might and understanding. With this object in view it is encouraging to know that there is no difficulty in devising a method by which the conscientious doctor can bind himself conditionally to refuse to co-operate without fear of being let down in the time of temptation by his less scrupulous colleague.

Finally, it is important to remember that one of the fundamental principles of democracy—perhaps the greatest—is the freedom to contract out of any proposition that is put before one. This principle is violated in the Bill as it stands. Are we going to submit without a struggle to the remnants of our true democracy being torn to shreds before our eyes? If we do not realize the danger others do and are taking appropriate action. All over the country patients (which here includes "doctors") are forwarding demands to their Members of Parliament to take active measures to ensure their freedom to contract out of the proposed National Health Service. Can the Government turn a deaf ear to this demand? Air-raid shelters were usually provided with emergency exits; concentration camps, so far as one knows, were not.—I am, etc.,

Bexley, Kent. E. U. MACWILLIAM.

SIR,—These are three criticisms of the Health Service Bill, favourable or unfavourable according to the political bent of the reader's mind, but in any case factual. (1) It is not a health Bill at all but it is one for organizing the treatment of sickness. (2) Under it, family doctors—the patient's own doctor—are to cease to exist as such and to become medically trained State servants. (3) The hospitals, which are all to become State property, are to be conducted by the Minister through appointees whom he sees fit to nominate. The present trustees, governors, boards of management, and municipal hospital committees are to be superseded. Whether or not their present members will be employed depends in the last resort on the Minister. May I comment on these headings in reverse order?

(3) Piety and the sense of public duty created the voluntary hospitals. St. Bartholomew's, begun 800 years ago by Rahere with his Augustinians, continues to-day, under fundamentally the same inspiration, to render irreplaceable service. "Every patient that enters this hospital is entitled to the best treatment" was in the "charge" with which each officer, including clerks and dressers (students), was admitted. When Henry VIII dissolved the monasteries, St. Bartholomew's struggled on, sustained by little else than piety and the sense of public duty, till (in 1546) the Lord Mayor's appeal to the King, in the dire need of the sick of London, secured the return of a part of the emoluments. Now, 400 years later, all the voluntary hospitals are faced by dissolution. Re-foundation under the broad arrow is to follow: will it carry with it the same piety and sense of public duty?

To return to (2)—the doctors. The advocates of the Bill say the patient will be able to choose his own, and, except that the remuneration of the doctor will come from public funds, their relationship will be the same as before. Such a statement is blind to the facts and to the genesis of the Bill. The germ of this part of it lay in a remark by Sir William Beveridge in his report that he was not concerned with the medical service except that, with payments so large as those provided for sick beneficiaries under such a scheme, the doctors must be so paid that their certification shall safeguard the funds. What else can that mean but that the doctors are to be Government servants and influenced by considerations other than the patient's condition alone? To which of his two masters is the doctor to cleave and which is he to despise?

Criticism No. (1), which is that the Bill is for the treatment of sickness and not a health Bill at all, is not a mere matter of a word. A health Bill's primary concern should be with the Ministry of Agriculture; for, in the words of Sir Thomas Browne (*Religio Medici*): "'All flesh is grass' is not only metaphorically but literally true, for all those creatures we behold are but the herbs of the field digested into flesh in them, or more remotely carnified in ourselves."

To epitomize the enormous subject of the influence of food quality in making or marring positive health, which, the B.M.A. tells us, should be the primary aim of a national health policy, may I quote a couple of writers 300 years later than old Sir Thomas: "In this purse-proud capitalistic age, soil fertility is our own true capital, and soil health the only sure and lasting prop of public health in its widest and truest sense." So the learned editor of the *Medical Press and Circular* says. And Friend Sykes, in *Humus and the Farmer*, published this month (Faber), says: "The health of the world is in the hands of the farmer. If he refuses to learn to farm properly and to understand the biological condition of his soil, then there is no hope either for the livestock industry of the world or for the future of mankind."

This conviction that soil fertility is the basis of public health, the source and stay of positive health, has for years been the concern of the Cheshire Panel Committee, and in spreading this evangel it has had the support of the Cheshire Insurance Committee. In this activity these bodies felt themselves to be carrying out the spirit of "the National Health Insurance Act . . . for the *prevention* and cure of sickness." While that Bill was under debate in the House I had a conversation with Mr. Lloyd George at his house at Walton Heath, and urged that if the aim were really prevention the clinical services must begin with the children and their mothers before they were born. He said, "This is only a beginning: that is a campaign for the future." But by instituting a panel system, with free choice and not a salaried service, he did, in fact, preserve the family doctor. The present Bill, instead of simply extending medical benefit to the families as Mr. Lloyd George intended and making provision for the techniques, some needing hospitalization, which modern medicine calls for, and for which the B.M.A. has asked successive Governments, throws down Mr. Lloyd George's work, replaces the family doctor by an official, and the people's hospital by a State institution; and for the grand item of positive health does nothing. The means to that end, at which I have hinted, may seem remote, but I think that the preoccupation with agriculture which Mr. Lloyd George evinced in the closing years of his life was due to the fact that he saw them.

That "the prevention of sickness" and the gift—what greater?—of positive health are within the power of a reawakened agriculture to confer in large and substantial part will seem fantastic to many; but the promise and the records are substantial, and in the *Hansard* Reports of the House of Lords debates on Lord Teviot's motion on Oct. 26, 1943, and the Earl of Portsmouth's on Feb. 2, 1944, the grounds of the claim are sketched by master hands.

That a Bill concerned with health, in name at least, should be laid before our legislators without thought of this alleged main factor, one which has been authoritatively laid before the Upper House, shows us that it is a strange world in which we live.—I am, etc.,

Holmes Chapel. LIONEL JAS. PICTON.

SIR,—I crave the indulgence of your readers to consider a new aspect of the national health scheme. I am tired of hearing and reading of the principles for which we are fighting—fine though they are. It was the patients who voted at the election; they are therefore, we presume, in favour of the present Bill. They asked for it; let them have it. I venture to suggest that the present system of our profession is finished. Let us therefore face the future united, and demand through our Association the best possible conditions (in a like manner to other unions): (1) good working conditions; (2) reasonable hours—a 48-hour week; (3) double the salaries, now suggested by the Interdepartmental Committee; (4) holidays with pay; (5) retirement at 60 on half-pay.

It is demands of this nature that Mr. Bevan and his party understand. Principles and human feelings are understood only by the few, not the masses. If we fight for these conditions we may save something; if we do not we shall lose all. In conclusion I would add that I have nearly 40 years of medical practice before me, not behind me; and, Sir, I am a Conservative.—I am, etc.,

Southsea. J. T. FURNIVAL.

A Suggestion for Referendum

SIR,—The Health Bill in its present form appears to give the Minister, or subsequent Ministers, dictatorial powers. Though most dictators of any ideology may start with good intentions, fate and human nature seem to bring about their eventual failure, especially in the more civilized countries. Their bad effects are less obvious among the semi-civilized; in fact they may appear as benefactors, where any stable Government is better than none at all. I must apologize for a rather pontifical statement, but it helps to strengthen my argument.

I suggest that many doctors, whatever their inclinations, will be compelled to undertake some form of State service on economic grounds alone, and that a referendum asking whether one would or would not undertake State service is likely to decrease bargaining power. I feel that a referendum on the following lines would be realistic and would carry weight: Will you join an association (one hopes under the B.M.A.) which will guard your interests in cases of unjust regulations, treatment, pay, etc., and abide by the instructions of this association (or union) when it considers that the policy of the health service is contrary to the general good or the rights of an honourable

profession? This association, in very grave instances, might advise its members to cease to collaborate in the administrative part of the health service without interfering with its humanitarian aspects. As the members would probably be suspended by the Minister and the receipt of definite fees against the law, patients might be asked to contribute to a general fund to help to tide the doctors over a difficult period. A general breakdown in a public organization would not be viewed lightly by the administrators responsible, the public, or the medical profession.

This suggestion is made in no mischievous spirit but to support my previous statement that unbalanced dictatorial powers in a highly civilized community usually lead to failure, because, even with the best of intentions, errors of commission or omission cannot be hushed up to the same extent or dealt with in other ways as in less civilized communities.—I am, etc.,

Westgate-on-Sea. F. W. G. SMITH.

Compensation under the Bill

SIR,—It appears from the Health Service Bill that compensation will be paid only to those doctors who enter the new service. From the Minister's point of view, no doubt, this is sound, because if compensation were paid to all then a large number of doctors would accept their compensation, stay outside the service, and do private practice only. But there must be many doctors who, on account of their financial position, their age, the state of their health, or because they do not wish to be bound hand and foot by red tape and regulations, would not wish to enter the service, but would like to continue doing private work and so maintain their interest in medicine. Is it fair that if they adopt this course they should forgo all compensation, even if their practices are of the type which contain a large number of people who would take advantage of the service?

I am not suggesting that such doctors should receive full compensation, but I maintain that it is only common justice that they should receive a fair percentage, otherwise the Minister either forces them to enter his service or confiscates the major part of their practices.—I am, etc.,

Stourbridge. GEOFFREY DUDLEY.

Buying and Selling of Practices

SIR,—The medical profession owes a debt of gratitude to the Negotiating Committee, but I cannot think its avowed desire to continue the custom of buying and selling practices, in the circumstances of the Bill, represents the attitude of a majority of general practitioners. The following appear to me important considerations.

1. The incomes indicated by the Spens Committee are considerably below those earned by good doctors; consequently these doctors will suffer an irrecoverable loss when they come to sell—a loss surely unacceptable to those who have purchased with the aid of insurance companies.

2. What would a practitioner have to sell when the Bill comes into operation? The private portion would scarcely be a transferable asset, and besides, a proper introduction would not seem feasible. The purchase of the National Health Service portion strikes me as hardly a good proposition. In short, the capacity to develop a practice will be very limited, and the chance of deterioration is inherent in the scheme.

3. Without a corresponding increase in remuneration the interest on capital so invested represents a further reduction of income.

4. The powers of even "negative direction" represent an obstacle to negotiating a sale.

In the light of these considerations I feel we should accept compensation as the only fair method of dealing with the problem, but press for its payment on the appointed day.—I am, etc.,

Southport. S. H. STEWART.

"Democratic Medicine"

SIR,—Once upon a time an eminent surgeon demonstrated a case to twelve students, and at the end of his remarks he asked each in turn whether operation was indicated. All twelve said that it was not, but the surgeon said, "Gentlemen, you are all wrong; I shall operate at 10 o'clock to-morrow." The patient, who was, one may assume, like Dr. P. G. S. Davis (April 20, p. 624), a believer in "a more democratic system of treatment," sprang from the bed, saying, "No, you ain't; gimme my trousers; twelve to one is good enough for me."

Perhaps Dr. Davis did not mean to advocate a system of treatment on these lines, but his words certainly suggest that he did. And, when a man writes about "buying and selling of the treatment of patients *en bloc*," one has little difficulty in assuming that he can believe anything, especially if it be impossible. Is it not time that we spoke of selling the goodwill of general practices? There is nothing else the doctor can sell to his successor. We know that patients tend to go to a house that has been a doctor's for many years, but if the service they receive is not to their liking they soon stop doing so; and if that is not (in a reasonable sense of the much-abused word) democratic, it is impossible to conceive of what is so.—I am, etc.,

London, W.1. A. PINEY.

The Minister and Medical Ethics

SIR,—If the speech of the Minister of Health on April 30, on moving the Second Reading of the National Health Service Bill, as summarized in the *Times* of May 1, is correctly reported, he shows a most lamentable lack of knowledge of the ethics of medical consultation. Does he not know that we ought not to see a patient who is actually under treatment by another practitioner without that practitioner's knowledge? And that a medical man who has seen another's patient "in consultation" must not accept such a patient as his own except in a consulting capacity? I know only too well that this ethical code has not always been observed by a minority of the profession, but it is in our view a right one and in the interest of patients.

Nothing that Mr. Bevan can say or that Parliament can do will make a wrong right. I trust, therefore, that Mr. Bevan either will be able to explain how his intentions have been misinterpreted or will abandon what appear to be his present intentions in this matter.—I am, etc.,

Huddersfield. WM. BARCLAY.

The Population of India

SIR,—Sir John Megaw (March 9, p. 343) has once more drawn attention to India's most vital problem—her increasing population. The rapidly increasing millions must be the concern of Government, but it is in the sphere of the individual family that the increasing population is experienced most acutely as a problem, and I believe that it is in this field that it can and must be answered.

As a typical example, I can think of a family of five children under 11 years old. The father was in war service, sending home Rs. 30 (£2 5s.) per month. The mother was ill and too weak to look after the children properly. She had hookworm and other intestinal infections, and her haemoglobin was 30% approximately. Within a month of the birth of the youngest baby two of the others had died of nutritional oedema. This did not occur during a famine. The usual answer suggested to the population problem is education in contraceptive methods, an answer which rouses a storm of opposition on moral and religious grounds, although in my experience the women of India would have no acute objections. But I am convinced that from a purely medical point of view ordinary contraceptive techniques are quite unsuitable for rural India, as hygiene is not in the least understood by the people. I believe that the answer is to be found in changing the social customs.

So far as I can ascertain, the present custom among the poorer sections of the community is to have intercourse as often as the husband wants it, which may be every night, and that is regarded by the womenfolk as "the nature of man." But I understand that at least among one section of orthodox Hindus a woman is allowed to sleep with her husband only at certain times, and at other times she had to sleep with her mother-in-law or another female relative. Times when intercourse was allowed included, I believe, the third, fourth, and fifth days after the end of the menstrual period; that is a little early but possibly includes the fertile period. Certain phases of the moon were also allowed. As a stimulus to increase of population there is in the Jewish Law a parallel regulation forbidding intercourse for a week after the menstrual period, and allowing it during what modern knowledge recognizes as the fertile period.

Now, in the light of knowledge gained in the last few years about time of ovulation and the fertile period, it should be possible to make available for those burdened with too many children the reverse custom. The population can be checked only if the method of control has the sanction of religious and social tradition. If Hindu custom has already recognized that certain parts of a woman's monthly cycle are suitable for intercourse and others are not, it seems probable that there should be no great hindrance to absorbing into social tradition the modern scientific discovery of the fertile period. If a couple have as many children as they are able to feed, it should be possible for the wife to persuade her husband to abstain from intercourse during the probable fertile period each month. As the women of India would welcome this knowledge there should be no difficulty in the spread of such a custom where the circumstances require it.—I am, etc.,

Trivandrum, Travancore. A. W. MEGAW BROWN.

Suprapubic Drainage of Bladder

SIR,—I have been long in replying to Mr. E. W. Riches's letter (April 13, p. 585). In the meantime I have heard of a number of accidents when blind suprapubic puncture was performed, one of them ending in the patient's death. He says the method aims at avoiding a low fistula, but with exposure of the bladder one can, and I always do, strip the peritoneal reflection upwards, and introduce the tube at the highest point on the bladder so exposed and bring it out at the top angle of the wound. This, I think, achieves the same purpose.

Mr. Riches questions the accuracy of my anatomy when I suggest that a tube introduced as he directs must frequently traverse the peritoneal cavity, and quotes anatomists as saying that with a full bladder (15 oz.—425 ml.) the peritoneal reflection is 3 in. (7.5 cm.) above the symphysis. I too can quote an anatomist. Cunningham (fourth edition p. 1277) writes that with distension of the bladder the peritoneal reflection "comes to lie 1½ in. [3.75 cm.], or even higher, above the upper margin of the symphysis." And this is where I usually find it, though of course it varies and may be almost as low as the symphysis. My incision is about 3 in. (7.5 cm.) long, and I cannot remember a case in which the reflection did not appear in some part of the wound. In the only case I have done since Mr. Riches's letter the bladder was well distended by acute retention from prostatic obstruction, and the reflection was about 1½ in. (3.75 cm.) above the symphysis. From careful survey of the parts it was quite clear that a tube inserted by his method would have traversed free peritoneum.

In the case I described there was no question of a pouch of peritoneum slipping down on each side of the catheter as Mr. Riches suggests. The symptoms, in the light of the subsequent findings, clearly showed that the trocar had penetrated free peritoneum when introduced. At the time of the prostatectomy the track of the catheter from the parietal peritoneum to the bladder was surrounded by adherent coils of intestine on all sides, and the peritoneal reflection was quite clear of it and well below—level with the symphysis. Though I can see that Mr. Riches's operation has many good points, I still think exposure of the bladder much safer.—I am, etc.,

Guildford. E. W. SHEAF.

The Use of Tuberculin

SIR,—The subcommittee of the Ministry of Health's Standing Advisory Committee on Tuberculosis has stated categorically its belief that exclusion of the Mantoux-negative reactor from tuberculosis nursing is in the interests neither of the nurses nor of the public. That there is a risk to the individual during the phase of conversion is recognized. The extent and nature of this risk in the convert nursing in the wards of a large general hospital has been studied by Daniels. There is, however, no convincing survey of nurses who acquire tuberculin sensitivity whilst nursing the tuberculous, showing the immediate, and late, results. The report of Edwards analysing his results at Market Drayton should have paved the way for other authorities to publish their own experience. The findings of the subcommittee would have been more convincing if they had been prefaced by these facts. Will the subcommittee or its individual members produce the facts relating to the incidence of primary lesions in staff in sanatoria and tuberculosis wards, showing their course, how the nurse was dealt with medically and administratively, with a five-year follow-up? I should think that Dr. Watt has these facts, or could get them for all the London County Council sanatoria for a number of years past.

It is also stated in your annotation (April 20, p. 615) that the proportion of tuberculin-negative reactors in the population is increasing, and by implication you use this fact to bolster up the case for the negative reactor's being used for tuberculosis nursing. Roughly stated, the less the hazards of meeting tubercle bacilli the longer the primary infection will be postponed. Sooner or later, however, this must lead to the time when there are in the population a high percentage of susceptibles, and then we can expect an increased incidence of florid tuberculosis.

The nurse and her health must come first no matter how our present staffing difficulties press us. We have already delayed far too long, and an investigation with B.C.G. vaccination should be undertaken forthwith.—I am, etc.,

Carshalton Beeches, Surrey. H. F. HARWOOD.

SIR,—In the annotation on the use of tuberculin (April 20, p. 615) it is stated that "the newer purified protein derivatives of Siebert and Long," which are "extensively used in the U.S.A., are not at present manufactured in this country, but can be imported." Since this statement ignores paragraph 4 of the report of the subcommittee, which is itself unconsciously misleading, it may be worth while drawing attention to the following points:

1.—P.P.D. tuberculins, both "mammalian" (human strain) and "avian," have been issued from the Veterinary Laboratory of the Ministry of Agriculture at Weybridge for the last four years. The issues of each are expected to reach 100 litres per month during the current year, and since the dose for cattle is 0.15 mg. mammalian P.P.D. as compared with the two human doses of 0.005 mg. and 0.00002 mg., this output could correspond to 30–750 million human doses *per month*. Expressed in terms of solution of potency equivalent to O.T. the estimate is of the order of 900,000 ml. per annum. This probably exceeds the P.P.D. production in the U.S.A., since the position in respect of man and animals is reversed in the two countries. The Bureau of Animal Industry in America still uses heat-concentrated synthetic-medium tuberculin (similar to synthetic-medium O.T.), and P.P.D. tuberculin is made only on a relatively small scale for use in the human subject.

2.—Paragraph 4 of the subcommittee's report states the fact that Weybridge manufactures P.P.D. for veterinary use, but adds that it could not undertake to issue it in sterile tablets of standard strengths. It should, however, be explained that this is not because of any inherent difficulty. It is merely that there is no veterinary demand for it in that form and that tableting machines are not part of existing equipment. The veterinary demand is for solution ready for immediate injection, in which form it is sufficiently stable to assign an adequately long "expiry date."

3.—Production of P.P.D. tuberculin by the Weybridge technique is simple and cheap, and no more troublesome than production of O.T. P.P.D. can also be easily prepared in the dry powder form, stored indefinitely, and issued in any desired form at any concentration. A single kilogramme of the dry powder is theoretically equivalent to 50,000 million 0.00002-mg. human doses, or 200 million 0.005-mg. doses. Despite the large wastage in discarding used phials or tablets this would presumably cover all medical requirements in the country for many years.

4.—Standardization presents no difficulty. There is no variation in potency of Weybridge P.P.D. tuberculin from batch to batch, and issues are on a weight-volume basis. A nitrogen determination is sufficient to define the potency, although in practice biological standardization is always carried out on guinea-pigs as well, using a dry reserve P.P.D. as standard. There is no reason to believe that there is any difference in potency between this reserve standard and Seibert's P.P.D., although there has been no occasion to make direct comparison. So far as an "international standard" is concerned the sensible procedure would seem to be to adopt Seibert's reserve stock P.P.D., upon which American medical experience now rests, check this very thoroughly against international O.T. (100 guinea-pigs, say, statistically treated) for the sake of linking with past British experience, and against a large reserve stock of British P.P.D. as now used by the Ministry of Agriculture. There would seem to be no need to adhere rigorously to one technique of manufacture of P.P.D. so long as equivalence in potency is assured.

5.—In actual practice the Mantoux test with synthetic-medium O.T. is not likely to differ materially from a similar test with P.P.D. solution of equivalent potency, since the probability of non-specific reactions from alien products present is not great at the high dilutions of O.T. used in the test on the human subject. In veterinary practice the test is carried out at such high concentration that almost neat O.T. would be used and the probability of non-specific reactions

tends to be enhanced. The main advantages are that P.P.D. is cleaner and can be much more easily standardized. The common error of biological standardization in an eight-guinea-pig test is of the order of ± 40%; of chemical standardization is less than ± 0.5%. Since a ± error can be additive, one sample of biologically standardized O.T. may have nearly twice the real potency of another unless a large number of test animals is used.

6.—The veterinary problem of diagnosis of tuberculosis is more complicated than the medical one because of the occurrence of "non-specific infections" in the bovine subject. The most common non-mammalian infection in the bovine subject is that of avian origin, and to facilitate differentiation a "comparative test" is adopted, using both mammalian and avian P.P.D. The next most common is Johne's disease. In veterinary work the "specificity" of a tuberculin, as well as its ".potency," has to be considered. The current use of human strain P.P.D. for the bovine subject arises from the history of development of testing and may not be permanent.

Detailed discussion of such points is beyond the scope of this letter, but it may be added that P.P.D.s from six different acid-fast organisms are stocked at Weybridge for research purposes, derived from human strains, bovine strains, and avian strains of *M. tuberculosis*, from B.C.G., Johne's bacillus, and the non-pathogenic *M. phlei*.—I am, etc.,

Weybridge. H. H. GREEN.

Penicillin

SIR,—The announcement in the press that penicillin will soon be on sale to the public in chemists' shops, and that refrigeration will be unnecessary, has been greeted with approval in some quarters. To the venereologist, however, it may become a source of serious difficulty. The indiscriminate use of penicillin cream, or lozenges containing penicillin, may perhaps mask the signs of early syphilis occurring on the genitalia or in the throat and may cause either considerable delay in the diagnosis or failure to diagnose the condition. The possibility of an increase in latent syphilis is thus to be anticipated.

Sir Alexander Fleming said at a meeting of the Society for the Study of Venereal Diseases that the question of "fastness" was very important. It was quite easy to make organisms penicillin-fast. One of the great advantages of penicillin was that it was non-toxic, so that when it became available in larger quantities doctors should not be frightened of using *large doses*. The question of the development of "fast" organisms through insufficient dosage should not therefore arise (*Brit. J. vener. Dis.*, Dec., 1944). It now seems to me that this problem may become a serious one and that the benefit gained on one hand may be lost on the other. Presumably it is impossible to continue restriction of a preparation which is harmless and is no longer in short supply. Nevertheless practitioners and the general public should be warned of these dangers.—I am, etc.,

L.C.C. (Whitechapel) Clinic. W. NEVILLE MASCALL.

Jejunal Diverticulosis

SIR,—I was interested in the short report by Dr. A. Klidjian on jejunal diverticulum (May 4, p. 683). I agree that this condition is relatively rare, although I have come across several examples in operations performed for other lesions. Some years ago I opened an abdomen for general peritonitis of uncertain aetiology and found a perforation of a large jejunal diverticulum, the size of a small pear, the point of rupture being situated at the neck and leading to infection of both the peritoneal cavity and the adjacent mesentery. This diverticulum was one of six, all being confined to one loop of upper jejunum, and complete cure was easily effected by resection of the loop and end-to-end anastomosis.—I am, etc.,

Isleworth. JOHN SCHOLEFIELD.

Transient Non-specific W.R.

SIR,—With reference to the article by Dr. J. H. Waelsch on transient non-specific Wassermann and Kahn reactions in a case of infective hepatitis (March 9, p. 353) the following case might be of some interest.

A 74-year-old miller was admitted on March 7 to the medical department suffering from attacks of pain in the right hypochondrium. He was deeply jaundiced and had a temperature of 102.2° F. (39° C.). The urine was dark. His history revealed only "Spanish influenza" in 1918. There was no history of venereal disease. The case was eventually diagnosed as cholelithiasis and septic cholangitis and treated with glucose, insulin, sulphadiazine, and duodenal lavage. He made an uneventful recovery, the jaundice fading in three weeks. The laboratory investigations do not show any findings of particular interest with the exception of the serological results.

On March 8: W.B.C. 12,300; B.S.R. (Westergren) 100 mm.; urine bilirubin +++; van den Bergh 8 mg.%; blood sugar 94 mg.%; Takata-Ara negative; blood W.R. ++++; Kahn +++; citochol +++.

On March 29: W.B.C. 6,000; van den Bergh 1.5 mg.%; urine negative; B.S.R. 45 mm.; blood W.R., Kahn, citochol, negative.—We are, etc.,

General Hospital, Kosice, Czechoslovakia. I. FRIEDMANN. F. POR.

Deafness from Rubella in Pregnancy

SIR,—Replying to Dr. Muriel B. Hall's letter (May 11, p. 737) none of the literature published to date suggests that there is any evidence of rubella damaging the unfertilized germ plasm of an ovum, and so causing the congenital defects attributable to this disease. The pathology causing the abnormalities is obscure, but it is thought that as lens and septa formation occur at the sixth to eighth week in the developing embryo, eye and heart lesions are more likely to occur if the disease is contracted about this time, and that the later the disease occurs in pregnancy the less likelihood will there be of any abnormality.

In an article on congenital defects following rubella in pregnancy (*Clin. J.*, May–June, 1946, p. 102) I reviewed the literature since my contribution to the Royal Society of Medicine (*Proc. roy. Soc. Med.*, 1945, **39**, 17), and I endeavoured to stress that in earlier cases multiple lesions were manifest in the babe, whose mother had contracted the disease in the early months of pregnancy, and that as deafness *per se* is not discovered until the child is older, many ailments of the child from birth to the time when deafness is manifest could account for that lesion alone. I feel that Dr. Hall's letter tends to complicate the matter still further. The evidence that some lesions are attributable to the disease, although increasing, is not yet proven, and until a complete survey of many cases for many years is available one should not add to the difficulties of arriving at a true assessment.—I am, etc.,

IVOR HUGHES.

Physical Therapy in Mental Disorder

SIR,—The question of the patient's fear of E.C.T. has been very adequately dealt with by Dr. W. L. Milligan (May 11, p. 735). In support of this I would like to add that on my ward round last week I was surprised to be approached by two voluntary patients with a request that they should be given a course of E.C.T. I was able to satisfy them that we did not consider this form of treatment appropriate for them and that other methods were likely to be more helpful towards their recovery. In both instances I found on inquiry that their request arose from observing the increased contentment and great improvement of three other patients who were undergoing, or had recently undergone, a course of E.C.T. with whom my applicants were in daily contact and had naturally discussed this treatment.

It is, I believe, of the greatest importance that immediately before, during, and after the convulsion until full recovery from the shock has taken place no patient should be allowed to see others. I have been told by patients that in some hospitals this is not invariably done.—I am, etc.,

St. Albans. W. J. T. KIMBER. Medical Director, Hill End Hospital.

SIR,—Dr. W. Liddell Milligan wonders if I am against combining E.C.T. with psychotherapy. I am not against any scientifically controlled research in our very difficult specialty, but there must be few types of cases which are usefully amenable to the combined attack. Disorders which are of psycho-social origin—such as reactive depressions, anxiety, and hysterical states—should naturally be treated on psycho-social principles; and disorders such as melancholia, which react best to E.C.T., are not claimed as suitable for analytic treatment except by a few rare enthusiasts. Of course, if by psychotherapy Dr. Milligan merely means a hearty slap on the back with cheerful reassurance, I have no doubt that a good suggestive effect is often produced. Indeed it is possible that a considerable number of the good results (unfortunately only temporary)

which follow E.C.T. are due not to the fits but to suggestive forces.

The comparison between the techniques of pushing the button and injecting pentothal is most inappropriate. The latter is followed by a psychological analysis of one hour; the former is followed by an epileptic fit, coma, and confusion, during which any form of analysis is out of the question. I must repeat my warning of the E.C.T. machine displacing psychotherapy. The optimistic view that psychotherapy will not be neglected, will be "combined with" a course of epileptiform fits, does not hold in practice. I have been asked to examine a number of patients who had received courses of E.C.T. in various mental hospitals, from York to Portsmouth, and I carefully inquired whether they had also been given a systematic course of psychological treatment. The answers have invariably been in the negative.—I am, etc.,

Basingstoke, Hants. I. ATKIN.

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Ocular Decompensation

SIR,—This is a subject in which I have interested myself. It seems not many practising ophthalmologists have worked upon Stutterheim's technique in this country. He advocates 24 consecutive sittings and endeavours to raise, and does raise, the kinetic vergence to 80°. I have found that such a sequence of treatments is utterly impossible for private patients under the conditions of modern days. I have found, however, that by limiting the procedure to 6 sittings one can raise a K.V. of 12° and under to 30° or over, and give gratifying relief of symptoms. I aim at giving 12 sittings and can then usually ascend to the fifties, when the effect seems pretty permanent. An occasional "flip up" may always be given if the K.V. falls too low. The treatment seems nearly always beneficial except in cases of neurasthenia, which is in alignment with Stutterheim's experience: "Neurasthenics are unsuitable for this therapy." From practical work in the consulting room I begin to think that the treatment is really a form of suggestion by which the patient is released from inhibited functions. I would suggest an analogy to the relief from the "stickiness" of a stammer. To say that glasses become unnecessary is too large a claim, though such cases occur. I do not quite accept Stutterheim's "fusion centre" explanation, nor the idea of "decompensation" of the present correspondence. As regards nomenclature "kinetic vergence training," to my mind, meets the case.—I am, etc.,

Hastings. GEOFFREY B. LOWE.

Words and Clear Thinking

SIR,—The daily press and almost every popular periodical annoy us with a rich array of words that have been coined mostly in the circumlocution office. I refer to such ugly monstrosities as "in short supply," "hospitalization," "G.I. brides," "key men," etc., etc., *ad nauseam*. Nevertheless, however unpleasant to the ear they have a certain accuracy of description. One hopes to be free from such gargantuan English when browsing in medical literature.

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> "The use of the term 'compensation' at the bedside conjures up or fosters the belief that, by signs derived from the chest wall, judgment upon a balance between dilatation and hypertrophy can be passed; such a belief is grotesque and, in so far as it is believed, it obstructs diagnosis. It is evident that many use the terms 'compensation' and 'broken compensation,' or its ugly equivalent 'decompensation,' at the bedside, and mean no more than to infer that venous engorgement is absent or present; but that is not what is to be understood. A plain observation is garnished with an assumption and served up in an unrecognizable form; this too prevalent habit is pernicious, for it destroys simple and precise habits of thought. Terms involving unproved hypothesis should be eschewed, and in this instance reference should be to the simple presence or absence of venous congestion. By this directness cumbersome, needless, and in fact erroneous, assumption is avoided, and simplicity and exactitude of expression are secured. The diagnosis of venous congestion is within the easy reach of all; it is a simple expression of what we see. The diagnosis of 'broken compensation,' in its proper sense, is within the reach of none."

Perhaps in future my enjoyment will not be so rudely interrupted.—I am, etc.,

F. R. ELLIS.

Rectal Cancer in Sisters

SIR,—The article entitled "Carcinoma of the Rectum in Sisters" (May 4, p. 683) attracted our interest and attention. It is our wish not to offer comment on the main burden of Dr. R. E. Rewell's remarks but rather to join issue with him over some comments he makes in his last paragraph on the statistical inferences that may be drawn from the evidence he submits.

The author writes, "On any system of probability it is extremely unlikely that sisters will die of the same condition which has a death rate of only 2.3 out of a population of 335,000." Now, since it is extremely unlikely that anyone will die of this condition, it is tautological to state that it is extremely unlikely that sisters will die of it! On the other hand, it is unsound to infer from his evidence that the probability of sisters figuring among the recorded deaths is small according to any system—whatever this unfamiliar phrase may mean. This probability depends on the actual number of deaths recorded for the period over which statistics are available, and on the "sister rate," or probability that a given woman has a sister. It does not depend directly, as the author seems to suggest, on the death rate from the disease. Neither of the statistics necessary for judging the probability of the relevant hypothesis (namely, that sisters are disposed to figure higher among the recorded deaths than would be expected through the random operations of pure chance) is given by the author.

The paragraph in question continues, "There would appear, therefore, to be statistical support for the contention that the conditions found in these women's colons were in some way connected. . . ." To derive statistical evidence for a hypothesis, as large a sample as possible should be subjected to quantitative examination. The rarity of deaths from the condition under investigation does not render it unnecessary to take such a sample; it simply renders it more difficult and more tedious. The death rate from the condition in no way affects the statistical support which can be derived for the hypothesis, which is concerned solely with those who die from the disease and is independent of the number which do not.

We have avoided, in our remarks, the more technical points which arise in assessing the validity of the hypothesis—such as the necessary tests of significance, estimations of standard errors, and assessment of *a priori* or existence probability of the hypothesis. We have also avoided discussion of the very important difference between probability and statistical theory. We have, however, tried to show the danger of jumping to statistical conclusions despite the lack of the requisite evidence. On the evidence submitted by the author, we could adopt similar lines of argument to his own and arrive at the startling conclusion that girls whose names contain the letter "d" are more likely than others to contract carcinoma of the rectum resulting in death.

We apologize for occupying so much of your space with this matter; but just as it has become axiomatic to recognize the important role which statistics may play in the service of medicine, so is it all the more necessary to guard against the danger of misusing this powerful weapon.—We are, etc.,

P. J. HILTON,
London, N.W.8. S. M. HILTON.

The Future of Nursing

SIR,—At a time when there is a shortage of nurses and the demand greater for the social schemes that are being planned, we seem to be likely to lose even those who have been trained. It is all a question of money. A staff sergeant recently demobilized from the R.A.M.C. and anxious to take up male nursing was informed that no R.A.M.C. experience will count in civil nursing. It will take him three years to qualify. He could now command 72s. a week, and when qualified 90s. a week, but would work for long hours. Being a married man with a

family he has to take an unskilled job as a bus conductor at £5 for a 48-hour week. He told me that even trained male nurses will not be returning to their old profession on those terms. It is exactly the same with the women.—I am, etc.,

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Judicial Functions

SIR,—The case of Dr. Hennessy in which disciplinary action by the General Medical Council resulted in his name being removed from the *Register*, and its sequel in the High Court when he was awarded exemplary damages against his accuser before the G.M.C., having particular regard to Mr. Justice Charles's remarks on the evidence, again gives rise to doubts, which have often been expressed before, as to the propriety of the G.M.C. in its present form having any judicial functions at all. Quite recently we heard of another doctor whose name this body thought fit to remove from the *Register*, apparently because he failed to visit his patients—surely a matter for action by the patients themselves in the ordinary courts of the land, or for the panel committee or other contracting body, or, possibly, even for the police if the alleged negligence amounted to an offence, rather than for a professional tribunal in the first instance.

Further it seems possible, if not probable, that we may anticipate a State Medical Service, the Bill for which contains certain disciplinary clauses that appear to provide for other quasi-judicial tribunals with disciplinary powers—e.g., Section 42—who will have what practically amounts to power to take away a professional man's means of livelihood; for under such a service as this Bill provides there would be very little left for the average medical man to do to earn his living in a respectable or legitimate way if he wishes to practise outside the scheme.

The G.M.C. is composed of very senior members of the profession, and is certainly not representative of a cross-section of the medical public, whose members it has powers to try. Of its 40-odd members only 7 are directly elected by the profession as a whole and by vote; the remainder are appointed.

As regards the tribunals with disciplinary powers contemplated under the Bill, goodness knows who will compose them, except that they will be "appointed by the Minister," and, presumably, if they wish to hold their jobs they will carry out official or unofficial Ministerial policy, and will accordingly be likely to deal suitably with recalcitrant members of the profession. Some of us may have already had experience of this kind of "justice" during our Service careers.

For these and other obvious reasons it cannot be urged too strongly that medical men should unite on this point, if on no other, that they should be afforded the ordinary rights of British citizens where penal measures or questions affecting personal or professional character are concerned, especially where such proceedings may affect a man's means of livelihood. It is a cardinal principle of British law that a man should have the right to be tried by his peers and in open court according to the ordinary rules relating to evidence and procedure. This would seem to imply in professional cases a jury of doctors roughly equivalent in status to the accused and taken from a cross-section of the medical public, instead of a kind of "Star Chamber" composed of the medical *élite*, or, worse still, what might eventually turn out to be a panel of "yes-men" appointed by an unscrupulous Minister to carry out his designs. In the case of Dr. Hennessy the G.M.C. by its action removed his source of legitimate livelihood, and did permanent damage to his reputation which no action they may now take could ever erase; and this apparently on evidence which, judging from the judge's remarks, could hardly have constituted proof in a legal sense, to say the very least of it. It would seem unlikely, as things are at present, that the injured doctor would have any legal remedy against the G.M.C. for the damage done.

The solution would be that neither the G.M.C. nor any other body should have the right actually to try anybody at all. This right should be the exclusive prerogative of the Crown acting through the ordinary courts of the land. In any case in which the G.M.C. or any other body wishes to take action against a doctor, such action should be taken in the ordinary courts and the accused tried in accordance with Common Law and the established rules of evidence and procedure as practised in the courts. After a court has reached an adverse verdict, the question of sentence, if the matter is a purely professional one, might be left to the G.M.C. or other disciplinary body. Of course in this case the accused would automatically have right of appeal to a higher court against the sentence of the lower one. What is so objectionable about the present and probable future position is the idea of a selected court, appointed by "higher authority" and with powers of inflicting what amounts to a "professional death sentence," against which there is practically no method of effective appeal to an impartial and disinterested tribunal.

I have no personal knowledge of Dr. Hennessy, and this letter is actuated by a desire to ensure justice for medical men on the same terms as are available to other citizens. After spending the last six years in fighting for so-called democracy and a reasonable degree of freedom, it is felt to be the duty of all right-thinking people to protest as forcibly as possible against anything savouring of totalitarian methods.—I am, etc.,

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Obituary

J. W. W. STEPHENS, M.D., F.R.S.

The death of Prof. J. W. W. Stephens, F.R.S., at his home at Ferryside, Carmarthenshire, on May 17 will be a cause of deep regret to those who during the early days of research in tropical medicine collaborated with him, as well as to many who passed through the Liverpool School of Tropical Medicine during the years he was professor at Liverpool and to those who later knew him as president of the Royal Society of Tropical Medicine and Hygiene—a society in the welfare of which he took a great interest.

John William Watson Stephens was born in 1865 at Ferryside. He was educated at Dulwich College and at Gonville and Caius College, Cambridge, and studied medicine at St. Bartholomew's Hospital. After taking his B.A. and qualifying M.B., B.Ch. in 1893 (followed in 1898 by M.D. and D.P.H. in 1894) he spent a number of years in research, holding the Trevor Lawrence studentship in pathology at Bart's 1895–6 and the John Lucas Walker studentship in pathology at the University of Cambridge in 1897, his work at this time being mainly in bacteriology. In 1898 he was appointed a member of the Malaria Commission of the Royal Society and Colonial Office, and from then until 1902 did pioneer work on malaria and blackwater fever, first in Central and West Africa and later in India. At this time, immediately after Sir Ronald Ross's discovery of the mosquito cycle in malaria, practically nothing was known about endemic malaria, and the foundations of our present knowledge on this subject are largely the result of this early work by the Commission. One of the most important problems facing the Commission was the nature of blackwater fever, and to Stephens, more than any other investigator, has been due the now accepted view that it is a consequence of repeated malaria infection. At the time the Commission concluded its work the Liverpool and London Schools of Tropical Medicine had been founded, and shortly after the opening of the former school Stephens was appointed Walter Myer's lecturer in tropical medicine there, and eventually, on retirement of Sir Ronald Ross, to the Alfred Jones Professorship of Tropical Medicine, Liverpool University, an appointment which he held from 1913 to 1928 and during which he contributed greatly to knowledge of tropical medicine. It was Stephens and Fantham who first distinguished and named the important trypanosome *T. rhodesiense*. It was Stephens again who distinguished and named *Plasmodium ovale*, the only malarial parasite other than the three classical species that has been fully established.

During the 1914–18 war Stephens, at the head of a team of research workers, carried out important researches on the treatment of malaria by quinine which largely altered the then existing ideas of methods of administration and were largely the reason for modern views on this subject. At this time, with the rank of lieut.-col., R.A.M.C., he was consultant in malaria, Scottish, Northern, and Western Commands. For his work he received the Charles Kingsley Medal in 1918, was Membre d'Honneur de la Société Belge de Médecine Tropicale, 1923, was Mary Kingsley Medallist, 1929, Manson Medallist, 1935, and Membre d'Honneur de la Société de Pathologie Exotique, 1936. He was president of the Royal Society of Tropical Medicine and Hygiene, 1927–9, and on his retirement from the professorship at Liverpool was made emeritus professor by the School.

As an investigator Stephens was one of the most critical and exact of any known to the writer in his long experience, and at the same time tireless in arriving at the basic truth in any subject he took up. His differentiation of *T. rhodesiense* and of *P. ovale* form classical examples of critical scientific acumen. As a man Stephens was rather reserved, utterly straight and absolutely incapable of anything but large-minded appreciation of others and their work. He has been the writer's greatest friend since the times spent in the towns and jungles of Africa and India. His chief recreation has been observation of bird life, and latterly, since his retirement, local archaeology, to which he contributed scientifically in one or two papers.

S. R. C.

Dr. W. F. L. DAY died on April 27 at Truro in his 69th year. He had retired, on account of ill-health, from his work as county tuberculosis officer for Cornwall, at the age of 67, during the last war. He was the youngest son of the late Dr. R. N. Day of Harlow, Essex, and a grandson of Dr. F. N. Day of Chudleigh in Devonshire. Mrs. W. F L. Day is a daughter of the late Dr. Williams, M.O.H. for Plymouth. These medical associations emphasize and may partly explain his love of his profession, which was very obvious to his patients and his medical colleagues. He was educated at Cheltenham and Caius College, Cambridge. He was a very prominent member of the Cheltenham cricket team and narrowly missed a Blue at Cambridge; later in his life he played for Cornwall on various occasions. In the 1914–18 war he was a member of the R.A.M.C., and when demobilized in 1919 began his duties as assistant county tuberculosis officer at Truro. He took a keen interest in the work of Epsom College and sent both his sons to that school. His elder son, Dr. F. M. Day, is now acting as M.O.H. for the Metropolitan Borough of Hammersmith. Immediately after his death the Cornwall Public Health Committee passed a vote of sympathy with Mrs. Day and family, and the chairman stated that the committee appreciated to the full the valuable work which had been done by Dr. Day as tuberculosis officer, and said that no man could have been more faithful to his work.

The death of Dr. WILLIAM HARRIS BEST occurred at St. Ives, Cornwall, on May 8. He was born at St. Ives in April, 1866, educated at Louth Grammar School, and received his medical training at the London Hospital Medical School, for which he consistently maintained throughout his long life a profound affection. For many years he was engaged in a large general practice in Ilford, and was one of the early founders of the general hospital there before his removal to Bournemouth, when he obtained the M.R.C.P. diploma and practised for many years as a consulting physician. Dr. Best was a former president of the Bournemouth Medical Society; he served in the 1914–18 war, and his skill as a neurologist was well demonstrated on the medical board of the Ministry of Pensions at Southampton during 1920–30 and in the early years of the recent war as consulting physician at the Fairmile E.M.S. Hospital. He excelled in dissecting and unravelling difficult diagnostic problems, and was a very successful, highly esteemed, and conscientious colleague who never spared himself in service and in the acquisition of modern scientific knowledge and developments. His colleagues and patients will gratefully remember withal his sterling high character and his courteous, kindly, and strictly ethical integrity. Dr. Best leaves a widow and two sons to mourn their loss.—W. A.

We regret to announce the death at the early age of 41 of Dr. ARTHUR SEWELL WESSON, physician in charge of the department of physical therapy at University College Hospital and at the Royal Surrey County Hospital, Guildford. He studied medicine at U.C.H., qualified in 1925, and took the M.B., B.S.Lond. in 1926, and the M.D. in 1928. He became a Fellow of the Royal College of Surgeons of England in 1936 and was elected a Fellow of the Royal College of Physicians in 1944. Dr. Wesson's early appointments at U.C.H. were those of house-physician, house-surgeon, and resident medical officer, and he won the Bilton Pollard Fellowship; later he was pathologist at the Queen's Hospital, Birmingham, and deputy medical superintendent of Mile End Hospital. He published a number of papers on rheumatic disorders. During the recent war he served in the R.A.M.C., reaching the rank of lieut.-colonel; he was released in October, 1945, and mentioned in dispatches. Dr. H. V. Deakin, lately physician to the Falmouth Hospital, sends a personal tribute from which we quote the following extracts: It must be about nineteen years ago when I received an urgent message to take a sick parent to the South of France. U.C.H. came to the rescue, and I received a telephone message to say that a first-class man was being sent down to be my locum. After a very full twenty-four hours with Arthur Wesson I left Falmouth with a light heart and did not return for five weeks. He had endeared himself to everyone; children adored him. His greatest gift was the happiness and joy he brought to others of all ages and in all walks of life. He had all the gifts that go to make that patient–doctor relationship such a firm and happy bond in general practice: a kindly nature, endowed with human sympathy and understanding, together with a delightful charm of manner and a very keen sense of humour. He came down and did several other locums, and "little Wesson," as he was affectionately termed in Falmouth, was well remembered there up to the time I left. After my retirement from practice I returned to London and started to look up old friends this year. I was distressed to hear that he was seriously ill, and then a few lines arrived asking me to call and see him in the private wing of U.C.H. Although so frail in body that same cheerful spirit would not be daunted, and we had several happy talks about old times.

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ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a special meeting of the Royal College of Physicians of London held on May 16, with the President, Lord Moran, in the chair, the following resolutions on the National Health Service Bill were passed:

1. The College acknowledges the urgent necessity for reorganization of the hospital service and approves the principles of the relevant proposals in the National Health Service Bill.
2. Much will depend on the Regional Boards, and the College agrees that the appointment of their members should be determined entirely by their personal fitness for the work.
3. To foster local interest and to encourage initiative the College believes that it is essential to allow hospitals as much independence in administration as is compatible with the regional plan, and for the same reasons it considers that in the case of endowments due account should be taken of the wishes of the donors.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Gift from Australia

The letter printed below enclosing a gift of £1,000 has been received by the President of the Royal College of Surgeons of England, Sir Alfred Webb-Johnson, from the President of the Royal Australasian College of Surgeons, Mr. H. R. G. Poate. This gift is in addition to a donation from the Fellows of the Royal Australasian College resident in New Zealand, and, with the individual contributions of surgeons in the two Dominions, brings the sum given by surgeons in Australia and New Zealand towards the restoration of the Royal College of Surgeons of England to £2,300. This evidence of the loyalty of Fellows of the English College resident at such a distance, and of the attachment of the Fellows of the Australasian College, will be a great encouragement and inspiration to the Council in its efforts to make the Royal College in Lincoln's Inn Fields a still more worthy headquarters of British surgery. Its endeavour will always be to provide full facilities for postgraduate study and research in the scientific departments and the unique museum, which have an imperial value and significance. The letter is dated April 30, 1946, and reads:

Dear Mr. President,

It gives me the very greatest pleasure to forward you the enclosed draft for £1,000 sterling, which represents a gift from members of the Council and Fellows of the Royal Australasian College of Surgeons resident in Australia, towards the cost of rebuilding the Royal College of Surgeons of England. In forwarding this amount, may I say that we all consider it a great privilege to have the opportunity of contributing our mite towards the restoration of the seat of learning to which we owe so much.

We in Australia cannot and never will forget what we owe to the Royal College of Surgeons of England, which has done so much towards raising the standard of surgery throughout the British Empire. I would like also to add that this feeling of Australian surgeons towards the Royal College of Surgeons of England only typifies the feeling which the Australian people generally have for the people of England, who have done so much and suffered so much throughout the present war.

We trust that in the very near future that great seat of learning at Lincoln's Inn Fields will again be restored, and so provide the facilities which we, as members of the British Commonwealth of Nations, have looked to in the years gone by.

At a meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, with Mr. William A. Sewell, President, in the chair, J. D. P. Graham, M.D., was admitted a Fellow of Faculty *qua* Physician.

Medical Notes in Parliament

HEALTH SERVICE BILL

The Standing Committee of the House of Commons resumed on May 15 consideration of the National Health Service Bill, Mr. BOWLES being in the chair. The first day's proceedings were reported in the *Journal* last week (p. 779).

Continuing with Clause 2, which deals with the Central Health Services Council and Standing Advisory Committees, Mr. WILLINK moved to omit the provision that each committee should be set up for the purpose of advising the Minister as well as the Central Council. He wished to be assured that when the Minister received the advice of Standing Advisory Committees that advice would also be made known to the Central Council. It was desirable that the Council should always know what a committee dealing with one particular side of the service was advising the Minister. Mr. BEVAN said he could give Mr. Willink the assurance he wanted. There was no danger of divergent activities. Though in urgent circumstances the Minister might have to act on the advice of a Standing Committee, nevertheless that report would be made known to the Central Council and would form part of the Central Council's annual report. Mr. Willink withdrew his amendment.

WITHHOLDING THE COUNCIL'S REPORT

Mr. MESSER moved an amendment dealing with the provision that the Minister may refrain from laying before Parliament a report, or part of an annual report, from the Central Council if he thought that to do so would be contrary to the public interest. Parliament should know the circumstances of public interest which would make it necessary to refrain from laying such a report. Mr. BEVAN replied that there were few instances in existing legislation where an advisory council had the right, such as this Advisory Council would have, to publish its reports independently of the Minister. At the same time the Minister must be responsible for the report and should be empowered to prevent publication of matters not in the public interest. If the Minister for any unworthy reason—for example, not to cause himself embarrassment—suppressed any part of the report there would be several ways in which these matters could be raised.

Mr. HOPKIN MORRIS said that when a matter came under the Official Secrets Act the Minister was already covered. In the Bill the Minister was given wider powers than in the Official Secrets Act. Sir HUGH LUCAS-TOOTH said that if the report were confidential members of the Council would be precluded from approaching their M.P.s on the subject and the matter could not be raised in the House because no Member could be properly in possession of the information. Mr. BEVAN said he could not accept the amendment because it would overrule the Official Secrets Act. He remarked that where an individual, even a civil servant, took the view that there was a conflict between what he considered the public interest and the obligation he had entered into, he could take the responsibility on himself of making disclosures. The House of Commons had often been made aware of things which individuals thought should be disclosed in the public interest. Sir HENRY MORRIS-JONES felt that the amendment would tie the Minister's hands in certain circumstances.

Dr. CLITHEROW asked whether reports liable to be withheld included reports of medical research. Mr. BEVAN: They might indeed. Dr. CLITHEROW then asked if it was not in the public interest that medical researches should not be disclosed until they had been absolutely covered in every direction. He was thinking of the sulphonamide preparations and those used in gonorrhoea. Owing to the early broadcast of this information the treatment had resulted in making the disease more permanent rather than in cures.

The amendment was negatived.

Mr. RICHARD LAW moved that the Minister would only withhold a report, or part of a report, after consultation with the Central Council. Parliament was setting up a vast compre-

hensive health service which was subject to a number of fundamental defects, and it was important that the Minister should publish the fullest account by the Central Council of how this machine worked. It would give the Central Council a feeling of greater confidence if it knew that the Minister, before exercising the power of suppression, would talk the matter over with the members and get their views. Mr. BEVAN said he could not conceive a more unhappy relationship between a Minister and an important body than the one which would give rise to the situation described by Mr. Law, but if assurances were necessary he was prepared to accept the amendment. The amendment was agreed to.

SERVICES OUTSIDE THE BILL

On the proposal that Clause 2, as amended, stand part of the Bill, Mr. J. S. C. REID pointed out that the definition of the scope of the activities of the Central Council limited that Council to considering questions arising out of the services provided under the Bill. A number of services were not referred to in the Bill—for example, venereal disease—and were provided under other Acts. The Council would be undesirably limited if the words "provided under this Act" remained. Another matter was that an advisory committee should, in the same way as the Central Council, have a power of initiative to advise on a general subject which related to its own branch of medicine. Looking at the text of the Clause he thought this power was by implication excluded. Sir WAVELL WAKEFIELD asked whether the Central Council's annual report might include a minority report.

Mr. BEVAN replied that if the Central Council wished to include the observations of members who disagreed with the majority it would probably do so. He would make it quite clear that the Standing Committees would have power of initiation. Mr. Reid appeared to suggest that the Central Council ought to advise the Minister on the sort of legislation which he should ask Parliament to pass. Under Clause 1 it was the Minister's duty to promote a health service designed to secure improvement in physical and mental health and the prevention, diagnosis, and treatment of illness. That was comprehensive, and it would be possible for the Council to advise on subjects of that sort. Where it might be limited was in connexion with industrial health services. He hoped such a service would very shortly be included, but to include it and others now would make the scheme administratively indigestible. Parliament ought to see what sort of pattern emerged before embracing an industrial health service. Educational health services would be slowly assimilated by the services under the Bill. One reason why counties and county boroughs were made health authorities was because they were education authorities at the same time, and it was hoped that the school health services would be gradually assimilated. If there was limitation on the powers of the Central Council to advise where departments or authorities were dilatory the Government would remove that limitation, but he doubted whether there was any.

Mr. LINSTEAD asked whether publication of interim reports of the Central Council would be withheld until the annual report of the Council reached the Minister. Mr. BEVAN replied that the Minister would be free to publish such reports at any time, but there should not be an obligation on him to publish a particular one.

The Clause as amended was approved.

THE APPOINTED DAY

On Clause 3, which deals with hospital and specialist provision, Sir HENRY MORRIS-JONES moved that the appointed day should not be before Jan. 1, 1950. Unless the appointed day was deferred for a reasonable period the Minister would be unable to fulfil his task. Hospital accommodation was promised under this Clause. At present there was a shortage of something like 200,000 beds. A large number of hospitals were antiquated, also their equipment. The shortage of accommodation was likely to continue over the next few years and to be such that the Minister would not be able to provide the services he proposed. Priority was still for housing. In addition the Minister was to provide medical, nursing, and ancillary services on a vast scale—all by Jan. 1, 1948. There was not the medical personnel in this country to run such services. Health centres had to be built or adapted by local authorities. How were these authorities to do this by the appointed day which the Minister had in view?

Mr. BEVAN said that if facilities were bad, as they were in many parts, the sooner they were rationalized and improved the better. It would be disastrous if the National Insurance Scheme came into operation and £30,000,000 were collected from people towards hospital services which the Government was unable to provide. If a long gap occurred before the measure was put into operation the voluntary hospitals would be in a serious financial state. It was already going to be difficult in the interval for many of them to obtain their normal revenue. The amendment was negatived.

MINISTER'S SOLE RESPONSIBILITY FOR HOSPITALS

Mr. WILLINK moved to alter the proposed duty of the Minister to provide hospital accommodation, etc., and to substitute words ensuring that it would be his duty to "secure the provision by local health authorities or by hospital management committees or boards of governors" of the same services. His amendment dealt with the question whether hospital services were to become the direct responsibility of a Minister of the Crown. The Opposition did not propose any amendment to the earlier subsection of the Bill which gave the Minister power to provide services in accordance with the Act. There was good ground for direct Ministerial responsibility for a national pathological service, but they did not agree that the Minister should be the primary responsible figure for the whole of the hospital services. The Bill made a change of principle which was fraught with great danger. The Minister misconceived the potential capacity of his Department. The amendment was drawn widely so that the bodies responsible for the hospitals might be of various kinds, and the committee was left free to determine in the later stages of the Bill what would be the proper hospital authorities. The real desire was not to change the person who provided the service but to ensure that the service should be planned, organized, and developed with the greatest possible amount of local interest and support.

Mr. BEVAN said that the amendment would completely change the character of the Bill. He agreed that he had overthrown the previous schemes brought forward for hospitals, as they were impracticable and based on a desire to conciliate conflicting interests. Parliament must keep before it the welfare of the patient and not the vested interests of corporate bodies. A great deal of the agitation on this matter was organized by persons who ought to be occupied with their hospital functions. There was no relevance in Mr. Willink's speech unless he had in mind that existing hospital authorities should remain the authorities to provide hospitals. Did Mr. Willink contemplate that voluntary hospital authorities should continue to provide hospitals?

Mr. WILLINK replied that it had never been his idea or that of the Conservative Party that the existing voluntary hospitals should be included in the same lay-out or constitution as they were now. The new authority should be an autonomous but regulated institution fulfilling the same sort of function as a statutory company or a local authority. Certain hospitals should be transferred from minor to major authorities; the smaller counties and county boroughs should cease to be hospital authorities; some voluntary hospitals should cease to be independent self-managing authorities. The vital question was whether they should continue to be autonomous hospitals only controlled by the Minister or whether they should become his servants.

Mr. BEVAN pointed out that Mr. Willink faced the problem of organization not functionally but politically, and sought to reconcile interests instead of organizing the hospital services. If hospital provision was left to autonomous bodies with indirect control there would be no guarantee that they would be able to fulfil their functions, and the only discipline that the Minister could exercise over them would be by withholding a grant. Mr. Willink's principle of indirect control ruptured the implied contract between the Government and the citizen. What the Government scheme did was to impose upon the Minister the duty of providing the service, but it entrusted administration to local members. To whom were voluntary hospitals now responsible? What authority could act on behalf of a complainant? In future there would be the house committee, the management committee, the regional board, and the responsibility of the Minister to Parliament as well as Questions in the House. So far from this service being subject to centralization the administration would be much more human than that which existed in many hospitals now. Mr. Willink's plan would provide, on the one hand, a paper planning authority and, on the other, an executive divorced from it.

Mr. HENRY STRAUSS could not share Mr. Bevan's view that the great hospitals which feared his proposals could be dismissed as mere sectional interests unconcerned with the public interest. He believed those fears were justified. These hospitals were made efficient by a sense of personal responsibility and self-government.

Mr. LIPSON saw objections to the responsibility for actual provision of the hospital services resting with the local authorities. Doctors had a rooted objection to being under control of the local authorities. They preferred the proposals in that Bill to those in the White Paper, very largely because they (the doctors) would not be under the control of the local authority. Dr. STEPHEN TAYLOR agreed with Mr. Lipson. Doctors were

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opposed to coming under local authorities because the possibilities of senior appointment were very limited in local authority hospitals. The virtues of voluntary hospitals sprang more from the internal staff arrangements than from their peculiar method of finance. There would be no difficulty under the new arrangements in preserving the voluntary hospital system of staffing. Mr. Strauss's assumption that there was some inherent link between research and the voluntary hospital must be dispelled; an enormous amount of research work had been done in municipal hospitals. Most medical research now was directly financed by the Medical Research Council.

Mr. MESSER contended that there was nothing in the machinery of a local government hospital which should make it any different from a voluntary hospital. Lord Moran had testified that municipal hospitals in the sector which he controlled under the E.M.S. were as good as any voluntary hospital. Municipal hospitals had hospital staff committees and all complaints went to them. In the hospitals over which he (Mr. Messer) presided no senior officer had power to discharge a member of the staff. There was no possibility of victimization and no reason for fear. The patients had an opportunity to express their opinions. What was lacking at the present time was a national standard. Mr. REID said the centralized system gave a temptation to stick to rules and go slow in introducing new ideas. No Government Department had succeeded in conquering those tendencies, and Mr. Bevan would not have greater success.

The amendment was defeated by 29 votes to 13 and the Committee adjourned.

Resuming discussion of Clause 3 on May 16, Mr. MESSER moved to insert ambulance services among those to be provided by the Minister at or for the purposes of hospitals. If the local health authority were to be responsible for the ambulance services for hospitals, this would be inefficient and unsatisfactory. Mr. KEY said he could give the assurance asked for; "services required at or for the purposes of hospitals" included transport of all kinds. Mrs. BRADDOCK said a centrally controlled scheme for transport of patients to hospital would be more satisfactory than that each little local authority should have its own ambulance service. Mr. KEY replied that there was need for an ambulance service other than the direct hospital one. The counties and county boroughs were the authorities responsible for providing ambulance services under the Bill. The Government thought it better for the local administrative authority to be responsible rather than the Regional Hospital Board. The amendment was withdrawn.

GENERAL PRACTITIONER SPECIALISTS

Col. STODDART-SCOTT moved to insert "consultants" in the subsection which authorized the Minister to provide for the services of specialists at a hospital, a health centre, a clinic, or "if necessary on medical grounds at the home of the patient." He said certain specialists were not consultants and certain consultants might be said not to be specialists. In some areas general practitioners were called out for consultation to give a second opinion because they had the confidence of their colleagues. They had no specialist qualifications nor would they describe themselves as specialists, but they were consultants. Many specialists who were known as specialist surgeons or physicians preferred to be called consultants rather than specialists. All these people would be required in the future health service.

Mr. KEY said there was no definition of specialists in the Bill. Regulations would be made under Clause 62 for deciding the qualifications of the people who were to serve in that capacity. Nothing would be added by putting into Clause 3 the word "consultants." A general practitioner specialist could be included if his qualifications met the requirements set out in the regulation. The Ministry did not wish to bind itself to taking into the specialist service everybody who pleased to call himself a consultant. It might be that in the early stages it would be necessary to use the services of less qualified people whom the Ministry would not wish to include later on. The committee ought not to bind itself to the view that general practitioner specialists were essential for inclusion. In that he believed he would be upheld by the Royal Colleges as well as by opinions expressed in the recent hospital surveys.

Sir HENRY MORRIS-JONES said a man might be a specialist in diagnosis but was not a specialist in the accepted sense of that word. Mr. WILLINK said one of the vices of English medicine had been a tendency to narrow the specialists and a great decline in the number of people of first-rate diagnostic capacity who practised the art of general consultant physician. Mr. J. S. C. REID asked if the Government proposed to draw the regulations in such a way that one medical man could at the same time be a part-time specialist or consultant and have status under the scheme of a general practitioner. Dr. MORGAN said there had been an increase in the number of people tending to become specialists within specialism, but there had been no decline in Great Britain of those physicians, some of whom preferred to be known as specialists and others as consultants, who were general practitioners of high standing with great knowledge of general medicine. Dr. CLITHEROW said many people who took higher qualifications were definitely in general practice and might be called specialized practitioners. If such a man with consultant's qualifications practised a specialty the committee should look upon him as a specialist. The amendment was negatived.

OPTICIANS

Dr. CLITHEROW moved to insert after the word "specialists" the additional category "ophthalmologists and optical practitioners, either full-time or part-time." During the Second Reading he had asked what was meant by saying that opticians would have proper professional status. Did Mr. Key mean the optical practitioner with qualifications recognized by the Ophthalmic Benefits Approved Committee? Were ophthalmologists and optical practitioners part of the specialist service? Mr. KEY said that in this subsection the term specialist meant specialized medical practitioner and did not include anyone who was not a doctor. Therefore it included the ophthalmologist but the optical practitioner came under the category "medical nursing and other services required at or for the purposes of hospitals." Replying to Dr. Morgan, Mr. KEY said there was no doubt that the meaning of specialist under Clause 3 was a registered medical practitioner under the Medical Acts who specialized in a particular subject. Mr. Bevan intended that those at present qualified under National Health Insurance would be regarded as qualified for the hospital services which were being developed under the present scheme. He could not pledge the Ministry to say that these qualifications would not be changed as the hospital scheme developed. It might be possible to raise the standard of the people employed. It would not be lowered. Dr. Clitherow withdrew his amendment.

Mr. MESSER moved to omit the words "on medical grounds" from the provision that the Minister may provide the services of specialists "if necessary on medical grounds at the home of the patient." Mr. KEY said the intention of the words was to ensure that if a specialist was called to a patient's home he went there because there was a need for him and not because of some whim on the part of the patient. If the patient's own doctor said it was necessary for the specialist to come to the home then the specialist went on medical grounds and could only be called there on those grounds. Mr. WILLINK said the drafting should be looked at again to make it clear to people that whether they had a second opinion or not depended on the general practitioner. The amendment was defeated by 23 to 17.

REGIONAL PLANNING

Mr. WILLINK moved to insert a proviso that "in considering the accommodation and services required as aforesaid the Minister shall have regard to plans prepared and recommended by each Regional Board for its respective area and to the advice thereon of the Central Council." Mr. Willink said that in the Bill the functions of the Regional Boards were administrative and not concerned with planning. The Minister should be instructed by Parliament to have regard to plans prepared and recommended by Regional Boards; he should not be the sole person to decide whether the plans were appropriate. On many questions concerning the regional plans the advice of the Central Council should be taken. Mr. KEY pointed out that the hospital service was to be a growing service and not circumscribed by a paper plan. Development schemes would result from discussions between the Regional Boards, the Minister, and the Boards of Governors of the teaching hospitals. These would not be included in some formal document. The Ministry wished to avoid an unnecessary number of schemes on paper. Detailed business was not the duty of the Central Council. The Government asked it for advice on special things, not for interference in the development of the service.

Mr. BEVAN said the Ministry wished to get its plans into operation quickly so that the service could start on the agreed date. To set up 16 or 20 Regional Boards would take time, and the Ministry of Health would have to hold off until 16 or 20 plans had been conceived in the Regional Boards. These plans would then go to the Central Council, which was an inappropriate body, being largely specialist and medical. That seemed to him the wrong way of setting about the task, because the Government wished to see some common features in all the regions from the beginning—for example, the 1,000-bedded hospital under its management committee. The Ministry wanted consultations with the Regional Boards as they were preparing their plans so that the Minister could accept those plans and put them into operation right away. The first thing he pro-

posed to do immediately Parliament gave him authority was to have the Regional Boards appointed, and the second was to ask those boards at once to prepare draft plans.

The amendment was withdrawn.

Mr. WILLINK moved an amendment to make an inquiry into the subsection of Clause 3 which provided for regulations being made by the Minister "in respect of the supply, as part of the hospital and specialist services, of any medical appliance." Mr. BEVAN replied that by the use of the word "medical" the Ministry was not trying to limit anything. It was dealing with medicine. It was not intended to place any limitation upon the provision of appliances necessary to repair any physical defects or to amplify any physical faculty. He was prepared to accept the amendment.

The committee agreed to the amendment and to a consequential one removing the word "medical" a little later.

In the provision that regulations may provide for payment by the Minister of travelling expenses incurred by a patient availing himself of hospital and specialist services, Mr. WILLINK moved to provide for payment of expenses which needed to be incurred in the future. Mr. BEVAN said it was not necessary to alter the wording to make it clear that expenses where necessary could be paid before they were incurred. But he was prepared to accept the amendment, and it was agreed to.

DEFINITION OF A SPECIALIST

Later, Mr. BEVAN said the service which Parliament had decided to provide was the service which the medical profession declared to be necessary. He must accept examinations and people must pass the examinations before the State could give that kind of service. He could not promise that a State service would be able to give any of those forms of treatment which were being given by general practitioners not qualified in the normal way. He could not say whether homoeopathic institutions would be in or out. If they were brought in it would be to provide their own particular form of treatment. The committee might leave them outside when it came to other parts of the Bill and discussed in what ways hospitals would be brought in. The test would be an empirical one of the requirements of the hospital services in a given area. He (Mr. Bevan) conceded it to be vital that the general practitioner should be encouraged to visit his patients in hospital. This business of taking a patient away from the general practitioner, handing him over to the hospital, and then back from the hospital to the general practitioner was wholly bad. The Government wished to encourage the general practitioner to identify himself more with the hospital service and to visit his patients. Many voluntary hospitals stopped the general practitioner from doing this. But it was another matter when the general practitioner claimed to be a specialist. He could not say in the Bill that such a general practitioner should be treated as a specialist, nor that because a general practitioner had one or two successes with a particular ailment he could thereby call himself a specialist. The medical profession had laid down no definition, but he was going to put that duty upon them because some definition was necessary. Clause 62 required him to make provision with respect to the qualifications, remuneration, and conditions of service of any officers employed by any body constituted under this Bill.

Mr. SOMERVILLE HASTINGS asked whether the definition of a specialist would be changeable. In the early stages certain general practitioners might have to be brought in as specialists. Mr. BEVAN said he proposed to ask the appropriate body—the Central Advisory Medical Committee first, because the Central Council would not be established for some time and he would have to act hurriedly—what body they considered ought to advise him for the purposes of this scheme. Definitions must always be regarded as liable to alteration as the service grew. In the meantime, many general practitioners who had shown by qualification and experience that they could be described as specialists could be used for that purpose until the specialist service had been properly established.

Mr. WILLINK asked whether the Minister would also consult knowledgeable people on whether "consultants" would not be a more appropriate word than "specialists." Sir H. MORRIS-JONES asked whether the Minister made any difference between consultant and specialist. Mr. BEVAN replied that if the Ministry was going to pay, as it probably would have to pay, a higher sum for consultants they wanted a genuine second opinion and not a second opinion on the same level. Therefore it was necessary to have some objective definition of what was a consultant; whether the word used was specialist or consultant did not seem to matter. He would have thought that dental services were an essential part of the equipment of the hospitals. Unfortunately, dentists were very short and the Ministry would have to take emergency steps to train them.

Clause 3 as amended was then ordered to stand part of the Bill and the committee adjourned.

Ophthalmic Hospitals Amalgamation

In the House of Lords on May 8 the Royal London Ophthalmic Hospital, Royal Westminster Ophthalmic Hospital, and Central London Ophthalmic Hospital (Amalgamation, etc.) Bill was read a first time. In the House of Commons on the same day a report was received from the Standing Orders Committee that the Standing Orders ought to be dispensed with and that the parties should be permitted to proceed with this Bill.

Distribution of Penicillin

Answering Dr. Clitherow on May 9, Mr. WILLIAM LEONARD said the Ministry of Supply had not completed its arrangements for the distribution of penicillin. Discussions with the Pharmaceutical Society were taking place. No control order had so far been made.

Blood Transfusion: Inadequate Supplies

Sir WAVELL WAKEFIELD inquired on May 9 whether the Minister of Health was satisfied that he had adequate supplies of blood for transfusion purposes, or what steps he was taking to ensure that a sufficient number of donors were available. Mr. BEVAN said the Emergency Blood Transfusion Service had difficulty in recent months in obtaining adequate supplies of blood. He had arranged for a film on this subject to be shown in cinemas and for local campaigns during the summer months throughout the country to encourage people to give blood. The need was as urgent now as it was in wartime. He hoped those who had helped would continue to do so, and that new helpers would enrol when an appeal was made in their locality.

Maternity Accommodation in Greater London.—Mr. ERNEST DAVIES on May 9 asked the Minister of Health to provide additional accommodation for maternity cases in the Greater London area, including Middlesex, in view of the suspension of the L.C.C. evacuation scheme. Mr. BEVAN replied that the scheme mentioned was still operating, though it was not able to meet all the demands made on it. Additional maternity accommodation was being provided in Greater London where the building stringency permitted and the necessary midwives and domestics could be found. More beds were already available than could be staffed.

Chiropody as Health Service.—Answering Mr. Moody on May 9, Mr. BEVAN stated that the National Health Service would provide treatment for foot complaints as for other disabilities. There would be a place for chiropodists in the new arrangements. Details would be settled in the process of bringing the service into operation.

Medical News

A general meeting of the Medical Society for the Study of Venereal Diseases will be held to-day (Saturday, May 25) at 11, Chandos Street, W., at 2.30 p.m., when papers will be read by Dr. Robert Lees and Dr. D. J. Campbell on "Venereal Diseases Over-seas."

A joint meeting of the Colour Group and the Medical Group of the Royal Photographic Society will be held at the Gaumont British Film Theatre, 142, Wardour Street, W.1, on Tuesday, May 28, at 6 p.m., at which eight Disney Health Education Films will be shown. These films were made under the auspices of the Office of Inter-American Affairs to teach the elements of health to primitive peoples.

A members' meeting of the Eugenics Society will be held at the rooms of the Royal Society (Burlington House, Piccadilly, W.) on Tuesday, May 28, at 4.45 p.m., for a discussion on "Eugenically Desirable Types." The annual general meeting of the society will be held at 4 p.m. the same day.

After the annual general meeting of the Nutrition Panel of the Society of Chemical Industry on Wednesday, May 29, in the rooms of the Chemical Society, Burlington House, W., a scientific meeting will be held at 6.45 p.m., when papers on the nutritive value (*a*) of vinegar, pickles, and condiments, (*b*) of margarine and edible fats, (*c*) of nuts, (*d*) of meat extracts will be read and discussed.

A meeting of the Overseas Association of the Medical Women's Federation will be held at B.M.A. House, Tavistock Square, W.C., on Thursday, May 30, at 2.30 p.m. Tea will be served after the meeting.

Circumstances have made it necessary to alter the arrangements for the annual dinner of the Ophthalmological Society of the United Kingdom on May 30. Instead of as announced on the programme, the dinner will be held at 7.30 p.m. at the Royal College of Surgeons, Lincoln's Inn Fields, W.C.

A clinical meeting of the London Association of the Medical Women's Federation will be held at the South London Hospital, Clapham Common, S.W.4, on Saturday, June 1, at 2.30 p.m., when cases will be shewn by the staff of the hospital.

The Chemical Society and the University of Oxford Alembic Club have arranged a joint meeting to discuss the chemistry of antibacterial substances. It will be held at the Physical Chemistry Laboratory, South Parks Road, Oxford, on Thursday, June 6, at 2 p.m., when papers will be contributed by Sir Robert Robinson, P.R.S., Mr. J. M. G. Pryce and Prof. C. N. Hinshelwood, F.R.S., Dr. D. D. Woods, and Dr. E. B. Chain. Fellows of the Society wishing to attend should write at once to Mr. F. M. Brewer, Inorganic Chemistry Laboratory, South Parks Road, Oxford.

The Medical Society of the L.C.C. Service will hold two general meetings in June. The first, on Thursday, June 6, will be in the form of a visit to the Roffey Park Rehabilitation Centre in Sussex, when members will make a tour of the centre. The other meeting of the Society will be held at the County Hall, S.E., on Wednesday, June 26, at 4.30 p.m., when a discussion on "Dental Disease in its Relation to Ill-health" will be opened by Mr. Ritchie Young.

The annual meeting of the Royal Medical Benevolent Fund will be held at 5 p.m. on Wednesday, June 12, at the Medical Society of London, 11, Chandos Street, Cavendish Square, W., when the financial statement for 1945 will be presented and the officers, committee, and honorary auditors will be elected for the current year.

The Scottish Council for Health Education announces three residential summer schools on the general theme of "healthy living" to be held at St. Andrews and Edinburgh this summer. Particulars from the secretary, 3, Castle Street, Edinburgh, 2.

Dr. J. A. L. Vaughan Jones, honorary secretary of the Leeds Division of the B.M.A., and joint honorary secretary of the Joint Council for Industrial Medicine, has been appointed a Justice of the Peace for Leeds.

Dr. E. B. Chain, a leading member of the team of scientists working at Oxford on penicillin, is leaving for Paris on May 28 to lecture on penicillin in the series by eminent British scientists arranged with the help of the British Council at the Palais de la Découverte. He will also lecture on "The Chemistry of Penicillin" to the French Biochemical Society.

A one-day conference to discuss problems connected with industrial information services was convened by the Association of Special Libraries and Information Bureaux and held in Manchester on May 8. About 100 members and guests attended. It is hoped that a printed record of the proceedings will be available in due course from Aslib, 52, Bloomsbury Street, London W.C.1.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* there was a sharp rise in the incidence of whooping-cough, notifications being 478 in excess of the preceding week's total. A rise was reported for dysentery 49, and falls for scarlet fever 109 and measles 82.

The largest increases in whooping-cough were those of Yorkshire West Riding 70, Middlesex 67, Staffordshire 54, Surrey 46, London 42, Lancashire 42. A small decline in measles was recorded in most areas, notably Essex 35, and the only marked exception to the general trend was a rise of 71 in Lancashire. The decrease in scarlet fever was largely contributed by London and Lancashire, where the cases were 39 and 36 fewer than in the preceding week. The largest variations in the incidence of diphtheria were an increase in Warwickshire 14 and a decrease in Lancashire 28.

The principal returns of dysentery were those of London 31, Lancashire 28, Surrey 25, Middlesex 19, Lincolnshire 12, Gloucestershire 10.

In *Scotland* a very large increase occurred in the incidence of measles, from 354 to 1,059. Rises were also recorded for whooping-cough 61 and scarlet fever 14. Notifications of diphtheria declined by 13. The totals for dysentery have been almost constant during the past three weeks, varying only between 60 and 63.

In *Eire* the notifications of measles increased by 20 and the cases of diphtheria declined by 8. The incidence of diarrhoea and enteritis remained unchanged at 42.

In *Northern Ireland* the cases of scarlet fever were 13 and whooping-cough 18 above the total for the preceding week.

Infantile Paralysis in Australia

The outbreak of infantile paralysis in New South Wales continues to spread. 357 cases have been reported this year.

Week Ending May 11

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,022, whooping-cough 2,180, diphtheria 368, measles 2,570, acute pneumonia 445, cerebrospinal fever 61, dysentery 137, paratyphoid 1, typhoid 9, smallpox 2.

No. 18

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended May 4.

Figures of Principal Notifiable Diseases for the week and the year for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1946					1945 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	58	10	27	—	1	50	7	30	1	1
Deaths		1	1				1	—		
Diphtheria	367	32	91	34	7	504	14	93	73	8
Deaths	3	—	—	—	—	9	—	4	1	1
Dysentery	212	31	61	—	—	469	51	172	1	1
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	1	—	—	1	—	2	—	—
Deaths		—					—			
Erysipelas			40	10	6			38	10	5
Deaths		—					1			
Infective enteritis or diarrhoea under 2 years				42					16	
Deaths	55	4	12	9	3	61	8	10	15	5
Measles*	2,711	1056	1059	49	2	13,139	815	355	68	21
Deaths	3	—	4	—	—	12	2	1	1	1
Ophthalmia neonatorum	98	7	14	—	—	62	5	14	—	—
Deaths				*						
Paratyphoid fever	6	—	—	—	—	7	—	2 (B)	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	610	41	5	3	1	518	27	8	2	3
Deaths (from influenza)†	14	1	2	—	—	10	1	1	—	—
Pneumonia, primary			197	24				174	26	
Deaths		39		12	6		22		7	8
Polio-encephalitis, acute	2	1				1	—			
Deaths		—					—			
Poliomyelitis, acute	3	—	—	3	1	7	—	—	—	—
Deaths		—					—			
Puerperal fever		1	21		—		2	14		—
Deaths										
Puerperal pyrexia‡	168	11	20	1	—	116	11	19	2	—
Deaths		—					1			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	945	65	161	21	32	1,351	70	205	9	50
Deaths	—	—	—	—	—	1	1	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	5	1	—	—	1	3	1	4	6	1
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,147	180	137	33	23	1,050	46	149	52	23
Deaths	13	4	1	2	—	5	—	3	3	—
Deaths (0–1 year)	357	38	64	29	19	356	39	64	40	20
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	4,600	673	591	212	149	4,280	568	589	244	130
Annual death rate (per 1,000 persons living)			13·0	13·6				13·4	15·7	
Live births	8,581	1220	1033	471	314	6,376	666	854	399	276
Annual rate per 1,000 persons living			20·8	30·2				17·1	25·7	
Stillbirths	264	34	35			190	11	35		
Rate per 1,000 total births (including stillborn)			33					39		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

Letters, Notes, and Answers

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ANY QUESTIONS?

Remedies for Herpes Zoster

Q.—*I am told that contramine has been found specific for herpes, the first injection relieving pain. Can you give me further details?*

A.—Contramine, which is diethyl-ammonium diethyl-dithiocarbamate, has been used for many infections, toxaemias, and states of shock. I am unfamiliar with its use in herpes and could not find a reference to it in the indexes covering the last few years. I presume the question refers to herpes zoster and not to herpes febrilis. Many remedies have been prescribed, but none has stood the test of time. The fact is that the clinical course of herpes zoster is so variable that one may easily obtain a short series of apparently highly successful responses to any form of therapy, but the broader test is likely to be disappointing. Some believe that daily injections of 0.5 ml. of pituitrin are successful in relieving pain and promote a rapid and satisfactory resolution. Intravenous injections of 10 ml. of 20% sodium iodide have also been recommended, and, more recently, injections of whole blood beneath the area of the eruption and about the corresponding posterior root ganglion have been said to be quickly effective. To the critical observer it is evident that there is no specific remedy yet for zoster or for herpes febrilis. Since both diseases are undoubtedly due to viruses, a specific would have to be a lethal or inhibiting agent for these infections, and contramine or, indeed, any of the remedies mentioned have no claims to be such agents.

Chronic Facial Spasm

Q.—*A woman of 58 has intolerable discomfort from blepharospasm, risus sardonicus, and choking feelings. Phenobarbitone has little, if any, effect. What is the treatment?*

A.—The aetiology of spasms such as those described is uncertain. The commonest variety is a spasm confined to the orbicularis oculi, synchronous on the two sides. The closure of the eyes is much more prolonged than in the common blinking tic of childhood, and the spasm may be practically continuous. The disorder is seen particularly in elderly women. Rarely, as in the case reported, other muscles of the face and those of the tongue and pharynx are also involved. The condition is sometimes regarded as a neurosis, but the writer's belief is that it is organic in origin. In the absence of post-mortem examination, however, the matter cannot be settled, and there is no clue to the site of the lesion if it is organic. Psychological treatment is usually quite ineffective and physical treatment is not much more helpful. Other barbiturates should be tried and will usually produce some diminution in the severity of the spasm.

Testicular Functional Levels

Q.—*Does an undescended testis atrophy after puberty? Does this apply to one in the inguinal canal and/or to one that is outside the external ring but not in the scrotum? Would the function of the testis be normal outside the abdominal cavity but not in the scrotum, or at which site could the organ function normally?*

A.—Abnormality of the undescended testicle may be histologically evident as early as 3 years of age (Cooper), but it is usually only after puberty that any difference can be observed between undescended and normal testicles (Wangensteen). After puberty the scrotal testicle develops rapidly, whereas the undescended one does not. Moreover, atrophy and degeneration of the tubules occur progressively as age advances (Vines; Pace and Cabot). The further from the scrotum the testicle lies, the more likely is degeneration to appear (Cooper). It is likely at any level, but Cooper quotes the case of a man of 60 whose testicle, situated at the external ring, showed some spermatogenesis. It is commonly believed that only the germinal tissue is affected. This is usually true, but signs of androgenic deficiency are not very uncommon in cryptorchids. The whole subject has recently been admirably reviewed by Bishop.

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Pethidine in Midwifery

Q.—*How should pethidine hydrochloride be used in midwifery? Is it justifiable to give, say, potassium bromide and chloral early in the first stage and then pethidine later?*

A.—The drug now known as pethidine in this country was introduced in Germany in 1939, under the name "dolantin," as a synthetic substitute for morphine. In the United States and Canada it is "demerol." Pethidine has now been extensively tried for analgesia in labour. Its chief advantage lies in the almost complete absence of toxicity to mother or foetus even with large doses. Doses of up to 650 mg. have been given in labour with no demonstrable ill effect, except that some patients have complained of slight giddiness or light-headedness. In labour pethidine exerts a satisfactory analgesic effect in a higher proportion of cases, though there is some individual variation in different mothers. There is no amnesic effect unless it is combined with scopolamine.

It is often unnecessary to give pethidine in the very early stages of labour, but there is no reason why it should not be injected as soon as the pains become distressing. An initial dose of 100 mg. may be given intramuscularly, and this may be usefully supplemented with 2 dr. (7 ml.) of syrup of chloral (22 gr., or 14 g., of chloral hydrate) by mouth twenty minutes later. The pethidine may be repeated as often as is necessary to maintain analgesia, even within one hour. If amnesia is required scopolamine should be given as well, but this is not free from danger—owing to a possible effect on the foetus.

Satisfactory results have been claimed from combining pethidine with other analgesics and sedatives, such as heroin, paraldehyde, and the barbiturates. Pethidine alone, or combined with chloral, is often sufficient for the conduct of normal labour, though in many cases, and especially in primigravidae, the analgesia is insufficient for the latter part of the first stage and for the second stage. Here gas-and-air or some other inhalational anaesthesia may be needed.

D.D.T. for Scabies

Q.—*Can D.D.T. be used to treat scabies?*

A.—D.D.T. is not recommended for treating scabies. This substance is an efficient insecticide and has given remarkable results against mosquitoes, flies, lice, bugs, etc. It is much less effective against arachnids (i.e., ticks, mites, etc.). Although the itch mite can be killed with D.D.T., several applications of any such preparation are required to cure scabies, whereas much quicker results can easily be obtained with other preparations (e.g., benzyl benzoate). Finally, it must be remembered that D.D.T. can be toxic to man, and that though when properly used as an insecticide it is not dangerous, rubbing it into the skin (particularly in an oily solution) may easily give trouble.

Amidopyrine and Agranulocytosis

Q.—*Can certain commonly used drugs containing small doses of amidopyrine cause agranulocytosis? If so, why is the use of such drugs not discouraged?*

A.—Agranulocytosis is relatively rare, and it is therefore understandable that there is little opportunity to study its relation to the dose of the substance which causes it. Thus we do not know if a patient who has been taking 0.6 g. amidopyrine (10 gr.) daily and has developed agranulocytosis would also

have developed it had he taken only 0.12 g. (2 gr.) daily. Recent observations on agranulocytosis after thiouracil have shown that the percentage of patients who develop agranulocytosis when taking a small dose daily is just as high as the percentage of those who develop it when taking a large dose. This suggests that the size of the dose is not the important thing, and that a susceptible person will develop it when taking even a small dose. Little more can be said.

In reply to the second part of the question there is no body in this country which is entrusted with the duty of encouraging or discouraging the use of drugs. Textbooks of pharmacology are available to all, and the medical man generally prefers to form his own opinion after reading them.

Chronic Pancreatitis

Q.—*What are the characteristic changes in chronic pancreatitis (1) in the pancreatic juice, (2) in the x-ray appearances of the stomach and duodenum?*

A.—The change in the pancreatic juice is a diminution in the active enzymes, particularly in the fat-splitting enzymes. As regards changes in the *x*-ray appearances of the stomach and duodenum, I should myself place no faith in these, apart from the possibility that deformity might be produced by the increase in size of the pancreas. Radiologists take a different view but I remain sceptical.

Peanut Butter Vitamins and Calories

Q.—*What are the vitamin content and calorific value of peanut butter and of arachis oil?*

A.—Peanut butter is presumably made by the maceration of the roasted nuts, which are also known as arachis nuts, earth nuts, ground nuts, or monkey nuts. Recent food tables authorized by the Medical Research Council give the vitamin B_1 content of the roasted nuts as 240 microgrammes per 100 g., which may be compared with 363 μg. for Manitoba wholemeal flour. According to Rose, vitamins of the B_2 complex are present, but no adequate analysis has come to our notice. Vitamins C and D are absent. The presence of vitamin A has been reported by some workers, but at the most there can only be traces of carotene associated with the non-oily fraction of the nuts. The roasted nuts contain 49% of oil, and have the high calorific value of 5.84 cal. per g.

Arachis oil, expressed from fresh nuts, is devoid of vitamins A and D, and is, indeed, often used in nutritional experiments as a constituent for basal diets free from the former vitamin. Vitamin E, however, is present in amounts up to 0.13 mg. per g., which is about one-tenth of the concentration in wheat-germ oil. The oil also contains linoleic acid and other highly unsaturated acids, which according to one group of workers make up nearly 25% of the oil. Although the necessity for these "essential fatty acids" as dietary ingredients has been clearly demonstrated in experimental animals, we are still awaiting, as also in the case of vitamin E, adequate proof of their importance for the human being. Arachis oil, in common with other fats, has a high calorific value of about 9.0 cal. per g.

Nervous Regulation of Acid–Base Balance

Q.—*How is nervous activity affected by disturbances of the acid–base equilibrium? What is the part played by the nervous system in its regulation?*

A.—Changes in hydrogen-ion concentration affect the excitability of the nervous system. An increase in acidity reduces excitability, while a decrease enhances excitability. These effects can be demonstrated on isolated nerve; in an experimental animal the reflex time for the knee-jerk can be shown to be increased by an injection of ammonium chloride and decreased by sodium bicarbonate. The convulsive activity of certain drugs is modified also, in the sense stated above, by acid or alkali. Hyperventilation tetany, where a shift towards the alkaline side of neutrality is caused by the "blowing off" of carbon dioxide, is a striking example of tetany associated with various types of alkalosis.

It is suggested that these effects of altered acid–base balance may be caused by changes in the ionic balance, particularly in the proportion of ionized to un-ionized calcium. An increase in the concentration of calcium ions causes a reduction in excitability and *vice versa*. In alkalosis the ratio of ionized to un-ionized calcium may diminish without any reduction in the total calcium concentration.

In the body there are three lines of defence against disturbance in the acid–base equilibrium: the buffer reactions of the blood, the regulation of the breathing, and the ability of the kidney to adjust the reaction of the urine. The nervous system is, of course, concerned with the second of these, the respiratory centre being acted upon directly by the blood and receiving impulses from the chemoceptors of the carotid and aortic bodies. For instance, a disturbance of the acid–base balance towards the acid side is compensated by increased respiratory activity, which reduces the carbon dioxide tension of the blood.

Lipoid Pneumonia

Q.—*Does the instillation of oily nasal drops cause lipoid pneumonia? How long does it take for this to happen, and can it be prevented?*

A.—Inhalation of animal and mineral oils into the lungs over a prolonged period may cause "lipoid pneumonia" with areas of consolidation, the alveoli being filled with macrophage cells containing oil droplets. Leucocytic infiltration, fibroblastic proliferation, and finally fibrosis occur. Cod-liver oil is the most common cause in infants; liquid paraffin by nasal instillations or even when taken by mouth in adults. Vegetable oils, such as poppy-seed oil, olive oil, etc., appear to be innocuous.

A brief description of lipoid pneumonia together with references to the literature is given in *Recent Advances in Pathology* by Hadfield and Garrod (J. and A. Churchill, 4th edition, 1942). Prolonged nasal instillation of liquid paraffin or other mineral oils—e.g., for longer than a few weeks at a time—should be avoided.

Oestrogens for Prostatic Cancer

Q.—*Is dienoestrol recommended for the treatment of carcinoma of the prostate with secondary deposits in most of the bones of the limbs? I started with a daily dose of 0.3 mg. and increased this to 1.8 mg., whereupon the pains in the limbs, which had been diminishing, increased.*

A.—The beneficial effects of oestrogens on carcinoma of the prostate are usually more marked on the prostate itself than on the metastases. Secondary deposits in lymphatic glands may disappear, as may those in the lungs. The effect on bony metastases does appear, from radiological evidence, to be a sclerosing one, but actual disappearance of the lesions is of doubtful occurrence. Determination of the requisite dose of oestrogen is assisted by regular estimations of the serum acid phosphatase, and if the response to dienoestrol is not good it might be worth while reverting to stilboestrol and increasing the dose up to 15 mg. daily. It is not likely that the increased dose is responsible for the worsening of the pain. If oestrogens fail to relieve bone and joint pain a course of deep *x*-ray therapy may do so; it is, in fact, more likely to be successful.

Causes of Pain in the Legs

Q.—*A woman of 45 has severe burning pains in the calves, radiating down to the plantar surfaces of the heels. The pain comes on about two hours after rising and is worse as the weather becomes warmer. She is free from pain in the cold winter months. There are no arteriosclerotic changes. Pethidine gives partial relief. Would sympathectomy help?*

A.—The problem here is whether the pain is due to a peripheral neuritis or to a vascular affection. Is there any evidence of alcoholism, or of diabetes? If the pain is neuritic in origin physiotherapy and preparations of vitamin B are indicated, coupled with the usual analgesic remedies. If the pain is of vascular origin vasodilator drugs might help—e.g., "doryl" (Merck) 2 tablets twice or thrice daily; "priscol" (Ciba) 1 tablet thrice daily; or "moryl" (Savory and Moore) 1 or 2 tablets three times a day. Buerger's exercises might be worth trying. Sympathectomy certainly comes up for discussion, but it is necessary to prove that some defect of peripheral circulation actually exists. Ekbom's "asthenia crurum dolorosa" (*Acta med. scand.*, 1945, **118**, 197) also comes into the picture as regards the differential diagnosis. It must be remembered that in peripheral vascular disorders local treatment with cold may prove of greater clinical and physiological benefit than measures aimed at increasing the circulation.

INCOME TAX

Car Expenses

B. R.'s demobilization leave expired on April 3, 1946. He bought a car for £575 on March 28 and began work as an assistant in general practice on June 1. What car allowances can he claim? (It is assumed that his agreement requires him to own and use a car at his own expense.)

*** He can claim an "initial allowance" (at 20%) and "depreciation allowance" (at 25% per annum) for the period from June 1, 1946, to April 5, 1947. Some difficulty may be experienced in determining the amount on which these allowances should be calculated — assuming that the car was used privately before June 1. A reasonable basis would seem to be to take the starting figure at £575 less 20% depreciation for two months—i.e., £575−(2/12 of 1/5 of £575)=£556. The usual running costs, etc., should also be claimed.

Accommodation of Assistant

F. W. inquires what is the position where accommodation (but not board) is provided for an assistant, but not in the principal's residence?

*** The matter is not entirely free from doubt, but in our view if the principal engages the rooms and is liable to pay the rent for them he can deduct the rent as a professional expense, but the amount is not chargeable to tax as income of the assistant. If, on the other hand, the assistant is liable to pay the rent but the principal pays it for him, the amount *would* represent income of the assistant.

Pension: Earned Income Relief

P. B. has retired on a pension from a local authority and tax is deducted under the P.A.Y.E. system. He inquires as to the "earned income relief."

*** The "personal" allowances are given by the operation of the "Code Number," and P. B. will presumably have received a notice giving him particulars of the allowances being effected in that way. The earned income relief applies to all income coming under "P.A.Y.E." and is given automatically by the tax deduction tables. Since the relief varies with the amount of the income it could not be given, as "allowances" are given, in specific sums.

LETTERS, NOTES, ETC.

Balanitis

"X. Z." writes: As an elderly surgeon, retired from the staff of my teaching hospital, I should like to add a note to the reply to the question under this heading in the issue of the *Journal* of April 27 (p. 671). Balanitis causes physical irritation and mental anxiety. It recurs at intervals. Many years ago I had found local applications useless. As your contributor says, "ordinary personal hygiene and keeping the affected area dry are all that is necessary." The problem is how to achieve this. Circumcision would do so, but the following simple measure renders operation unnecessary. The prepuce is retracted and the patient is shown how to wrap some turns of 1 in. (2.5 cm.) gauze around the glans and the retracted prepuce; the end of the gauze is slit with scissors and tied in a bow knot. The area becomes comfortable at once, but sometimes it is not easy to retain the gauze in position, and when the gauze comes adrift friction with the clothes is rather uncomfortable. The bow knot makes reapplication easy. It is convenient for the patient to carry a roll of 1 in. gauze in his pocket. Only sufficient gauze is needed to keep the prepuce retracted and to protect the glans from friction. For the first few days comfort demands that the gauze be reapplied soon after it has slipped, but very soon the intervals between reapplication are lengthened until, in a shorter time than it would have taken a circumcision to heal, it is found that the glans is no longer sensitive to friction with the clothes, the secretion has dried, the prepuce remains retracted, and no further attack occurs.

Dr. Troup of Pretoria

Miss FREDA TROUP, B.A., and Dr. ADRIANUS PIJPER write from Box 5783, Johannesburg: We have collaborated to compile a life of Dr. J. MacD. Troup of Pretoria (whose death last year was recorded in your columns) for private circulation. There must be many among his colleagues, and possibly still some of his university contemporaries, with whom we are not in personal contact, who would like to have a copy. We therefore beg your assistance in making this known. The story is told mainly by contemporary letters, and there is an authentic ring to the account of life as a small boy in Scotland, and later at St. Andrews and Cambridge Universities and King's College Hospital. After Dr. Troup migrated to this country his letters to his brother, Sir Edward Troup of the Home Office, form an interesting contemporary record of everyday life and opinion. Through all emerges implicitly the character of a man of great character and understanding, who deliberately forsook the youthful promise of professional eminence and shunned fame and wealth for the toil of general practice, preferring its reward of friendship above all other, and gaining, despite himself, an unsought renown. His story is by no means unique in his generation, and this perhaps enhances its interest. We are publishing this book, *Physician and Friend*, by subscription, the subscriber being entitled to one copy for every 30s. paid. Any surplus funds there may be after expenses have been met will be divided between the South African Medical Benevolent Fund and King's College Hospital, of which Dr. Troup was a student and a Governor. Those wanting copies are asked to communicate with us as soon as possible.

Nocturnal Erections

Mr. GEOFFREY PARKER (London, W.) writes: I have just read the question and answer (May 4, p. 707) on nocturnal erections. Would you suggest to your writer that he have his patients very carefully urethroscoped. Cystoscopy will reveal nothing, but since I wrote a paper on haemospermia (*Proc. roy. Soc. Med.*) just before I went into the Army I have seen three cases, with very similar symptoms. In two of these a small subepithelial cyst was seen in the prostatic urethra, just distal to the verumontanum, and the third man had a very congested verumontanum. All three appear to have been cured by fulguration of the cysts, which had the effect of bursting them, and also of the congested verumontanum. I do not know what the origin of these cysts may be; they might be retention cysts, following chronic inflammation, or may be congenital in origin.

Dr. H. E. COLLIER (Worcester) writes: Help may be given by (*a*) regular attention to the bowels and (*b*) avoiding drinking fluids late in the day. If either of the patients be suffering from a urinary excretory defect (whether due to heart or to kidney), the erections and passage of urine at night may be attributable to the defect. The erections may be "caused by" the full bladder.

Nocturnal Proctalgia

Prof. F. C. PYBUS writes: In 1910 I sent a description of this condition—which I called nocturnal rectalgia—to the *B.M.J.*, but which apparently was not thought worthy of publication. It was a most definite reality, for I became acquainted with it while house-surgeon at the Gordon Hospital, S.W. (in 1909). I could find no account of it in the books on surgery or rectal diseases, and it was apparently unknown to any proctologist with whom I was then in contact. As this rectal pain is sometimes accompanied by priapism it might have been thought to be due to a prostatic lesion, but its occurrence in the female proved this incorrect. Indeed it may affect a whole family, male and female alike. In 1931 I had, through a request in the *B.M.J.*, considerable correspondence with doctors who suffered from it or who had met with it in their practices. I am now, however, able to indicate a means of speedy relief. If the sufferer will start the gastro-colic reflex by taking food or drink (preferably the former) he will find that within a few seconds the pain will disappear as if by magic.

Stethoscopes for the Deaf

Dr. C. H. R. KNOWLES, of Sutton Emergency Hospital (Sutton, Surrey), writes: In the answer to a question on the most efficient type of stethoscope for the use of a deaf doctor (April 20, p. 633) no mention is made of electric stethoscopes. A highly efficient instrument of this type has a piezo-electric crystal microphone, with tone and volume controls, and is fitted into a small portable case. My own deafness is such that with the ordinary varieties of stethoscope (and I have tried them all) I can never hear such sounds as crepitations or an aortic diastolic murmur, and very often I am quite unable to hear the heart sounds or the normal respiratory murmur. With the acquisition of one of these electric stethoscopes, however, all my auscultatory problems have been solved, and my deafness is in this respect perfectly compensated. If the querist would care to communicate with me I should be delighted to give him further details of my experience with this instrument.

A Clean Shave

Dr. WILLIAM MURRAY (Birmingham) writes: Dr. L. Erasmus Ellis (May 4, p. 710) mentions that with seven razor blades and using a different one each day of the week, *some* of them last for months. I think it is worth noting that I have no difficulty in making *one* razor blade last a *year*, by the simple expedient of rubbing it gently every day on the inside of a common glass tumbler filled with hot water. I have used only three blades in the past three years, and all were blades that had previously been discarded as finished.

Precaution when Using Throat Packs: Correction

We hasten to correct a misprint in Dr. H. Parry-Price's note published last week (May 18, p. 786). The fifth sentence should read: The lid of the throat pack tin is painted red, and across it in white letters "THROAT PACK IN."